

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL
WELL ☒

GAS
WELL ☐

OTHER

2. NAME OF OPERATOR

Axem Resources Incorporated

3. ADDRESS OF OPERATOR

7800 E. Union Ave., Suite 1100, Denver, Colorado 80237

4. LOCATION OF WELL (Report location clearly and in accordance with the State requirements)

At surface

2170' FNL & 2170' FEL

At proposed prod. zone

SAME

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

20 Miles Southeast of Blanding, Utah

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drig. unit line, if any)

N/A

16. NO. OF ACRES IN LEASE

1006 OIL, GAS & MINING

17. NO. OF ACRES ASSIGNED

80

18. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

N/A

19. PROPOSED DEPTH

6200

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

5181' GR

22. APPROX. DATE WORK WILL START*

January 1989

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	50'	95 Sxs
12-1/4" II'	8-5/8"	24#	2000'	1380 Sxs
7-7/8"	5-1/2"	17#	6200'	235 Sxs

Attached please find complete 8 point drilling program and 13 point Surface
Used plan for the above captioned well.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Shari L. Janata BLP

TITLE

303-740-9000 EX. 334
Materials Coordinator

DATE

12-22-88

(This space for Federal or State office use)

PERMIT NO.

43-037-31461

APPROVAL DATE

APPROVED BY THE STATE

OF UTAH DIVISION OF

OIL, GAS, AND MINING

APPROVED BY

TITLE

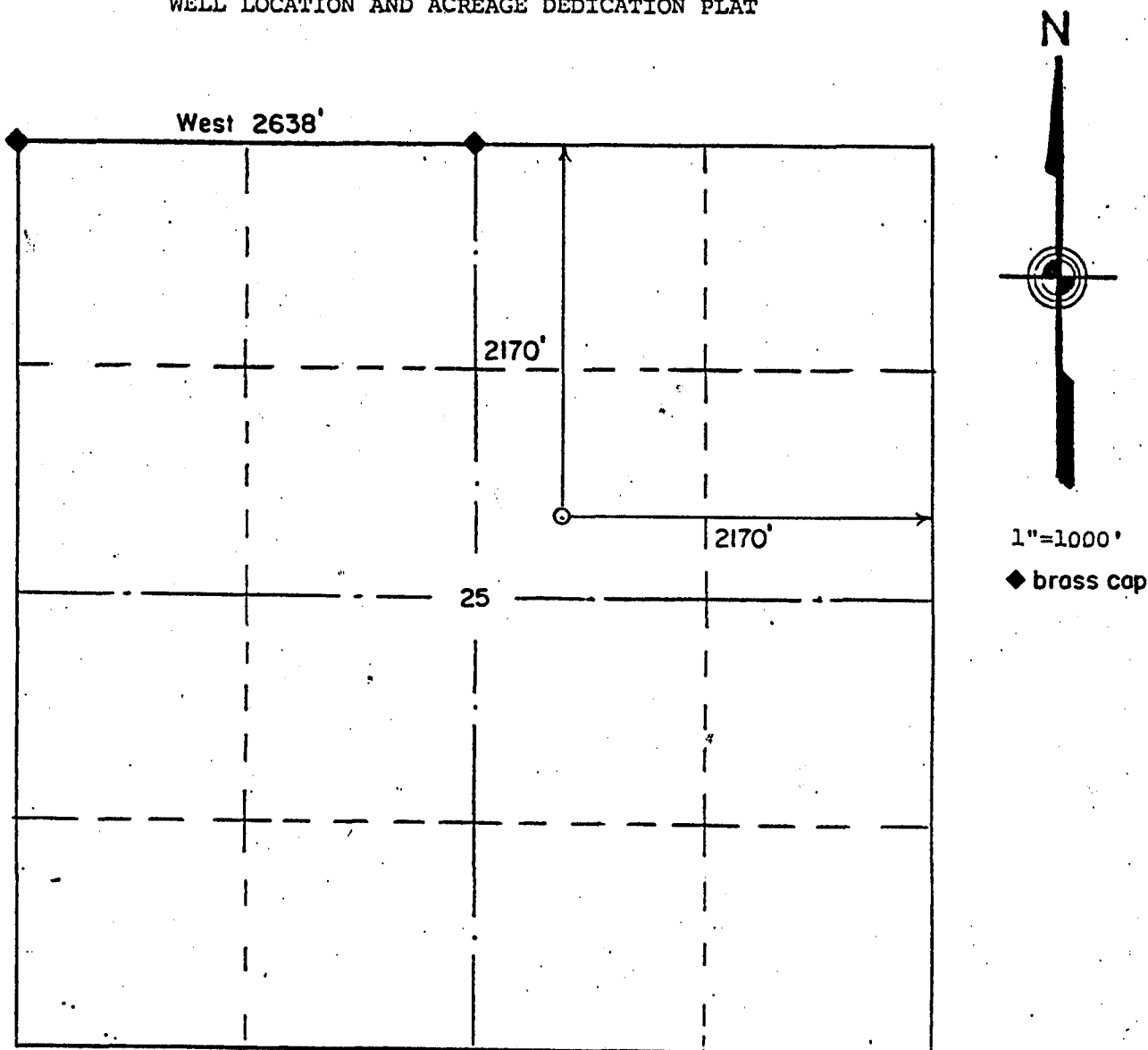
DATE: 12-13-89

BY: [Signature]

WELL SPACING: 1/2 15-3-2

*See Instructions On Reverse Side

WELL LOCATION AND ACREAGE DEDICATION PLAT



WELL LOCATION DESCRIPTION:

AXEM RESOURCES Black Steer Federal 7-25

2170'FNL & 2170'FEL

Section 25, T.38 S., R.24 E., SLM

San Juan County, Utah

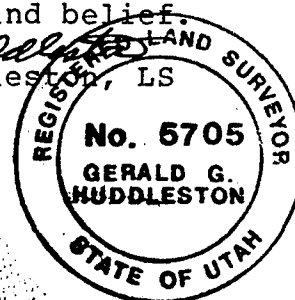
5181' ground elevation

Alternate: 2290'FN, 1990'FE, 5182' ground elevation

The above plat is true and correct to my knowledge and belief.

7 December 1988

Gerald G. Huddleston
 Gerald G. Huddleston, LS





Axem

Resources Incorporated

December 22, 1988

RECEIVED
DEC 27 1988

State of Utah
Division of Oil and Gas Mining
355 West North Temple
Salt Lake City, Utah 84180

DIVISION OF
OIL, GAS & MINING

Bureau of Land Management
P. O. Box 970
Moab, Utah 84532

Attention: Oil and Gas Division

Re: Black Steer Fed. #7-25
Section 25, T38S-R24E
San Juan County, Utah

Gentlemen:

Please be advised that Axem Resources Incorporated wishes to keep the above captioned well a "TIGHT HOLE" and CONFIDENTIAL. Please do not release any information concerning the drilling or completion of this well.

Feel free to call if there are any questions.

Sincerely,

AXEM RESOURCES INCORPORATED

Shari L. Janata
Materials Coordinator

BLACK STEER #7-25
SW NE Section 25
Township 38 South, Range 24 East
San Juan County, Utah

RECEIVED
DEC 27 1988

DIVISION OF
OIL, GAS & MINING

All lease operations will be conducted in full compliance with applicable laws, regulations (43 CFR 3100), Onshore Oil & Gas Order #1, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors. Axem Resources Incorporated will furnish a copy of these conditions to its field representative to assure compliance.

B POINT DRILLING PROGRAM

1. SURFACE FORMATION AND ESTIMATED FORMATION TOPS:

Cretaceous Burro Canyon is the Surface formation.

Formation Name	Depth from GL* 5181'	Depth from KB 5190'	Subsea Depth
Chinle	1951'	1960'	+ 3230'
Shinarump	2701'	2710'	+ 2480'
Moenkopi	2781'	2790'	+ 2400'
Cutler	2951'	2960'	+ 2230'
Honaker Trail	4801'	4810'	+ 380'
Upper Ismay	5781'	5790'	- 600'
Hovenweep	5901'	5910'	- 720'
Lower Ismay	5931'	5940'	- 750'
Gothic	5981'	5990'	- 800'
Upper Desert Creek	6016'	6025'	- 835'
Lower Desert Creek	6051'	6060'	- 870'
Chimney Rock	6081'	6090'	- 900'
Akah	6106'	6115'	- 925'
Salt	6131'	6140'	- 950'
TOTAL DEPTH	6200'		

* Ungraded ground level.

2. NOTABLE ZONES

The estimated formation top depths from ungraded GL at which water, oil, gas or other mineral bearing zones may be encountered are:

Entrada	981'	(+4200)	Possible Fresh Water Zones
Navajo	1171'	(+4010)	Possible Fresh Water Zones
Wingate	1621'	(+3560)	Possible Fresh Water Zones
Cutler	2951'	(+2230)	Possible Uranium Zones
Upper Ismay	5781'	(-600)	Possible Oil & Gas Zones
Lower Desert Crk	6051'	(-870)	Possible Oil & Gas Zones

Water bearing zones will be protected with weighted mud. All fresh water encountered during drilling will be recorded by depth, cased, and cemented. All oil and gas shows will be tested to determine commercial potential.

3. PRESSURE CONTROL

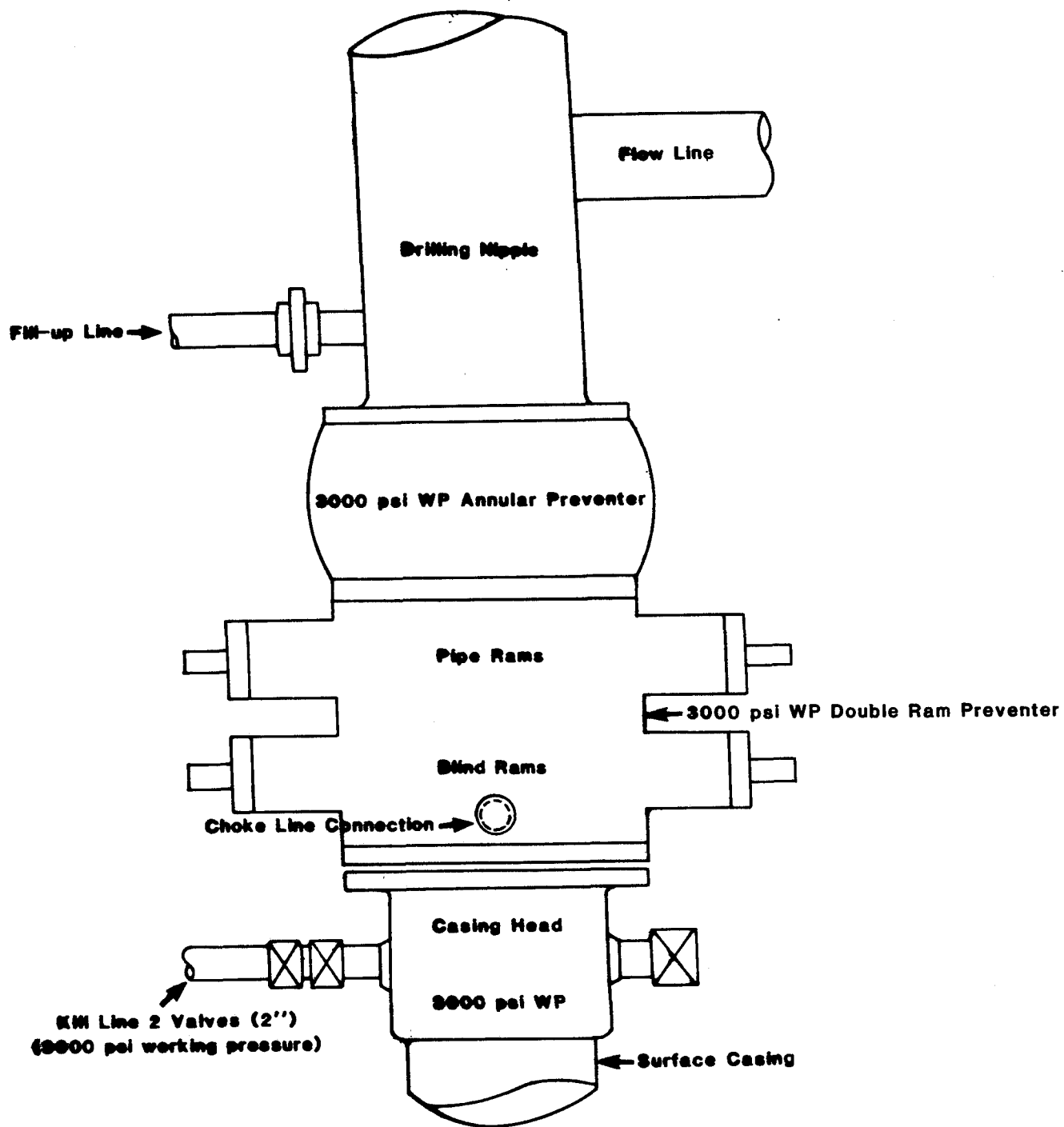
BOP systems will be consistent with API RP 53. An 11" X 3,000 psi double ram and annular preventer with a 3,000 psi choke manifold will be used. A typical example of a 3,000 psi BOP is on Page 3. The actual model will not be known until the bid is let.

Ram type preventers will be tested to the rated working pressure of the stack or to 70% of the internal yield of the casing, whichever is less. The annular type preventer will be tested to 50% of its rated working pressure.

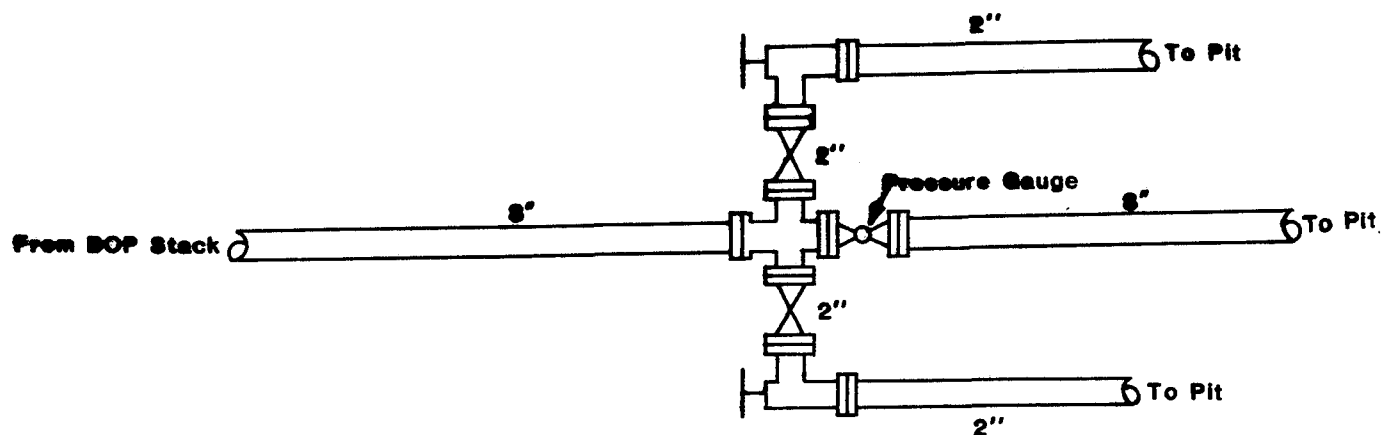
Pressure tests will be conducted before drilling out from under all casing strings which are set and cemented in place. BOP controls will be installed before drilling the surface casing plug, and will stay in use until well is completed or abandoned. Preventers will be pressure tested before drilling casing cement plugs.

BOPs will be inspected and operated at least daily to assure good mechanical working order. All BOP mechanical test, pressure tests, and inspections will be recorded on the drillers log or daily drilling report.

BLOWOUT PREVENTER DIAGRAM



11" 3000 PSI WP Blowout Preventer Stack

CHOKE MANIFOLD DETAIL

**All valves, chokes, upstream lines, and fittings are
Series 900 (3,000 PSI WP).**

4. CASING & CEMENTING:

Hole Size	O.D	Weight	Grade	Type	Setting Depth (GL)
17-1/2"	13-3/8"	48#	H-40	ST&C	0' - 50'
12-1/4" 11'	8-5/8"	24#	K-55	ST&C	0' - 2000'
7-7/8"	5-1/2"	17#	k-55	LT&C	0' - 6200'

Conductor Pipe (0'-50'): Cement to surface with = 95 sx.

Surface Casing (0' - 2000'): Cement to surface with =1380 sxs Class B.

Production Casing (0'- 6200'): Cement from 6,200' (TD) to 4,700' in one stage with =235 sx. Class B and Poz.

5. MUD PROGRAM

Depth	Type	Weight (ppg)	Viscosity	Fluid Loss
0' - 150'	Gel - lime slurry	8.5-9.0	35-50	No Control
150' - 2000'	water, flocculant, lime	8.4-8.6	26-32	No Control
2000' - 5570'	water, flocculant, lime	8.4-8.7	26-32	No Control
5570' - 6200'	Gel-Chemical, Caustic Soda	9.0-10.5	40-45	10.0 or less

6. CORING, TESTING, & LOGGING

No cores are planned. Drill stem tests may be run in the Upper Ismay and Lower Desert Creek zones if good shows are found. Cuttings will be collected every 30' from the surface to 5,000'. A two man mud logging unit will be present from 5,000' to TD. Cuttings will then be collected every 10'. The following logs may be run:

LOGS

GR/CAL/FDC/CNL From T. D. to approximately 5000 feet
 GR/CAL/BHC/Sonic From T. D. to base surface casing
 GR/CAL/DLL/MSFL From T. D. to base surface casing

Whether the well is completed as a dry hole or producer, "Well Completion or Recompletion Report and Log" (Form 3160-4) will be submitted not later than 30 days after completion of the well, or after completion of operations being performed, per 43 CFR 3162.4-1. Two copies of all logs, core descriptions and all other data obtained during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. (If requested, sample cuttings, fluids, and/or gases will be submitted to the District Manager.)

7. DOWNHOLE CONDITIONS

The maximum anticipated bottom hole pressure is 2,700 psi. No abnormal pressures, temperatures, or hydrogen sulfide are expected.

8. MISCELLANEOUS

The anticipated spud date is in January, 1989. It is expected it will take =15 days to drill the well and 10 days to complete the well.

The spud date will be phoned to the Resource Area, a minimum of 24 hours before spudding. A Sundry Notice (Form 3160-5), reporting the spud date and time, will be sent to the District Manager within 24 hours after spudding. If the spud is on a weekend or Holiday, the Sundry Notice will be sent on the following regular work day.

No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the District Manager. If operations are to be suspended, prior approval of the District Manager will be obtained and notification given before resumption of operations.

Starting with the month in which operations begin, and continuing each month until the well is physically plugged and abandoned, a "Monthly Report of Operations" (Form 3160-6) will be sent to the District Manager. BLM Moab District office, P. O. Box 970, Moab, Utah 84532.

Immediate Report: Spills, blowouts, fires, leaks, accidents, or any other unusual events will be promptly reported to the Resource Area per NTL-3A.

If the well is successfully completed for production, then the District Manager will be notified. Written notification will be sent not later than 5 business days following the date on which the well is placed on production. The Resource Area will schedule a first production conference within 15 days after receipt of the first production notice.

Approval to vent/flare gas during initial well evaluation will be obtained from the District Manager. This preliminary approval will not exceed 30 days or 50 MMCF of gas. Approval to vent/flare beyond this initial period will require the District Manager's approval per NTL-4A.

No well abandonment operations will begin without the prior approval of the District Manager. With a newly drilled dry hole, failure, or emergency, oral approval will be obtained from the District Manager. A Sundry Notice will be sent to the District Manager within 30 days following completion of the well or abandonment. The Sundry Notice will note where plugs were placed and the current status of surface restoration. Final abandonment will not be approved until reclamation required by the approved APD or abandonment notice has been completed to the satisfaction of the landowner.

Once plugged, and if allowed by the landowner, a regulation dry hole marker will be installed. The following legend will be beaded on with a welding torch: Axem Resources Incorporated, Black Steer #7-25, SW NE Sec. 25, T38S-R24E, U-52656.

AXEM RESOURCES INCORPORATED
BLACK STEER #7-25
SW NE SECTION 25,
TOWNSHIP 38 SOUTH, RANGE 24 EAST
SAN JUAN COUNTY, UTAH

13 POINT SURFACE USE PLAN

1. EXISTING ROADS & DIRECTIONS (See Pages 14-16)

Approximately 20 Northwest to Blanding, Utah.

From Hatch Trading post go North for 8.7 miles to Perkins Ranch Road, Go Northwest on Perkins Ranch road to Alkali Ridge Road for 4.1 miles. Go Southeast on Alkali Ridge road for 5.9 miles to location.

Existing roads are county. Application for an Encroachment Permit has been filed with the San Juan County Road Department.

Roads will be maintained to a standard at least equal to their present condition.

2. ROADS TO BE BUILT (See Page 14).

- a. The maximum total disturbed width will be 30 feet.
- b. Maximum grade: NA
- c. Turnouts: None.
- d. Location: will be flagged and follow seismograph line. Less than 1000' of access road on lease.
- e. Drainage: none for drilling.
- f. Surface Materials: None for drilling.

Surface disturbance and vehicular travel will be limited to the approved location and access road. Any additional area needed will be approved by the Area Manager in advance.

The access road will be rehabilitated or brought to Resource (Class III) Road Standards within sixty (60) days of dismantling of the drilling rig. If this time frame cannot be met, the Area Manager will be notified so that temporary drainage control can be installed along the access road.

3. EXISTING WELLS (See Page 14), one mile radius.

- a. McCulloch #1-25 Federal Dry hole
700' FSL 500' FEL
SE SE Sec. 25, T38S-R24E
T. D. 5775 Feet
- b. Milestone #30-1 Sioux Federal Dry hole
2060' FSL, 2020' FWL
NE SW Sec. 30, T38S-R25E
T. D. 5750 Feet

4. PROPOSED PRODUCTION FACILITIES

All permanent (onsite for six (6) months or longer) structures constructed or installed (including oil well pump jacks) will be painted a flat, nonreflective earth tone color to match the standard environment colors, as determined by the Rocky Mountain Five-State Interagency Committee. All facilities will be painted within (6) six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) may be excluded. Colors will be as follows: Desert Tan. A working Diagram on Page 15.

The tank battery will be surrounded by a dike of sufficient capacity to contain 150% of the storage capacity of the largest tank in the battery.

Site security regulations in 43 CFR 3162.7-4 will be obeyed. All product lines entering or leaving hydrocarbon storage tanks will be effectively sealed.

All off-lease storage, off-lease measurement, or commingling on-lease or off-lease must have prior written approval from the District Manager.

All off-lease storage, off-lease measurement, or commingling on-lease or off-lease will have prior written approval from the District Manager.

All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed.

Any gas meter run will be within 500' of the wellhead. The gas flowline will be buried from the wellhead to the Production unit then to the meter and downstream of the meter and any production facilities. Meters will be housed and/or fenced.

Oil and gas measurement facilities will be installed on the well pad. Meters/tanks will be calibrated in place before delivery begins. Meter/tank accuracy tests will be conducted monthly for the first 3 months on new meters/tanks, and at least quarterly thereafter for meters. The Resource Area will be provided with a date and time for the initial meter calibration and all future meter proving schedules. A copy of the meter calibration reports will be sent to the Resource Area. All meters will conform with the API standards for liquid hydrocarbons and AGA standards for natural gas measurement.

5. WATER SUPPLY

All water needed for drilling purposes will be obtained from: Private source and trucked to location. Temporary water permit is being applied for from State of Utah.

6. CONSTRUCTION MATERIALS.

Pad construction materials will be on lease native soil in place on the well pad.

7. WASTE DISPOSAL.

The reserve pit will not be lined.

The pit will be fenced on 3 sides with 4 strands of barbed wire or woven wire topped with barbed wire. The 4th side will be fenced once the rig moves off. The fence will be kept in good repair while the pit dries.

All trash will be placed in trash basket or earthen pit. When full, it will be hauled to the Blanding dump or a landfill in Montezuma County. A burning permit is required for burning trash between May 1 and October 31. Call the San Juan County Sheriff at (801) 587-2237 for a burning permit. The road and pad will be kept litter free.

Human waste will be disposed of in 20' deep ratholes or chemical toilets. The ratholes will be immediately filled when the trailers are removed.

Produced water will be confined to the reserve pit for a period not to exceed 90 days after initial production. During the 90 day period and NTL-2B application will be submitted for the District Manager's approval of a permanent disposal method and site.

8. ANCILLARY FACILITIES.

There will be no airstrip or formal camp. Three camper trailers may be on site for the company man, mud logger and tool pusher.

9. WELL SITE LAYOUT.

See pages 16 & 17 for depictions of the well pad, cross sections, cut and fill diagrams, reserve pit, burn pit, access road onto the pad, parking, living facilities, and rig orientation.

The top 6 inches of soil material will be saved and stockpiled on the northwest corner of the pad. Topsoil along the access road will be reserved in place adjacent to the road.

Access to the well pad will be from the rear of the pad.

The trash pit will be located in the Southwest corner of the location see page 16.

10. RECLAMATION.

Immediately upon completion of drilling, all trash and debris will be collected from the pad and surrounding area and placed in the trash cage.

The reserve pit will be completely dry before it is backfilled. Reclamation will be in accordance with agreements between the Operator and the landowners.

All disturbed areas will be recontoured to the approximate natural contours.

The stockpiled topsoil will be evenly distributed over the disturbed contours.

Prior to reseeding, all disturbed areas, including the access roads, will be scarified and left with a rough surface. Rip 6 inches deep with 18 inches apart.

Seed will be broadcast or drilled at a time specified by the BLM. If broadcast, a harrow or some other implement will be dragged over the seeded area to assure seed coverage. October 1 - February 28.

Seed mixture will be 6 lbs/acre crested wheatgrass, 1/2 lbs/acre Sand dropseed and 2 lbs/acre Fourwing saltbush. Increase rates by 50% if Broadcast.

The reserve pit and that portion of the location and access road not needed for production or production facilities will be reclaimed.

11. SURFACE OWNER.

The owners of the pad is the Bureau of Land Management, U. S. Federal Government owns the minerals. Address P. O. Box 970, Moab, Utah 84532. Phone is (801) 259-6111.

12. OTHER INFORMATION.

Archelological site on Southeast side of the location will be fenced on pad side, the Top soil removed will be monitored for cultural resources.

The dirt contractor will be provided with an approved copy of the surface use plan.

There will be no change from the proposed drilling and/or workover plan without prior approval from the District Manager. A Sundry Notice will be filed for approval for all changes of plans and other operations per 43 CFR 3162.3-2.

Safe drilling and operating practices must be used. All wells, whether drilling, producing, suspended, or abandoned will be identified per 43 CFR 3162.3-2.

All persons in the area who are associated with the project will be informed by the holder/operator that they will be subject to prosecution for disturbing archaeological sites or paleontological sites, or collecting artifacts or fossils.

Any cultural and/or palentological resources discovered by the holder/operator, or any person working on his behalf, on public or federal land shall be immediately reported to the authorized officer (BLM-San Juan Resources Area office (801) 587-2141). The holder/operator shall immediately suspend all operations in the area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder/operator will be responsible for the cost of evaluation of the discovery and or any required mitigation measures. Any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder/operator and other affected parties.

This permit will be valid for one year from the date of approval. After it expires, a new application will be filed for approval of future operations.

The District Office's mailing address is P. O. Box 970, Moab, Utah 84532. The phone number is (801) 259-6111. Contact is Dale Manchester.

The Resource Area's mailing address is P. O. Box 7, Monticello, Utah 84535. The phone number is (801) 587-2141. Contact is Bob Turri or Rich McClure.

The nearest hospital is a 45 minute drive to Blanding, Utah on County road northwest of location. Or take highway 262 and highway 47 from Hatch. San Juan County Hospital phone number is (801) 678-2830. The closest medically equipped helicopter is in Grand Junction, Colorado, at St. Mary's Hospital. Call (303) 244-2550.

13. REPRESENTATION AND CERTIFICATION.

Anyone having questions concerning the APD should contact:

Brook J Phifer
7800 E. Union Ave., Suite 1100
Denver, Colorado 80237
(303) 740-9000

The field representative for Axem Resources Incorporated will be:

Neal Leafdale
800 W. Werner Ct.
Casper, Wyoming 82601
(307) 266-3856

certification

I hereby certify that I have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Axem Resources Incorporated and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filling of a false statement.

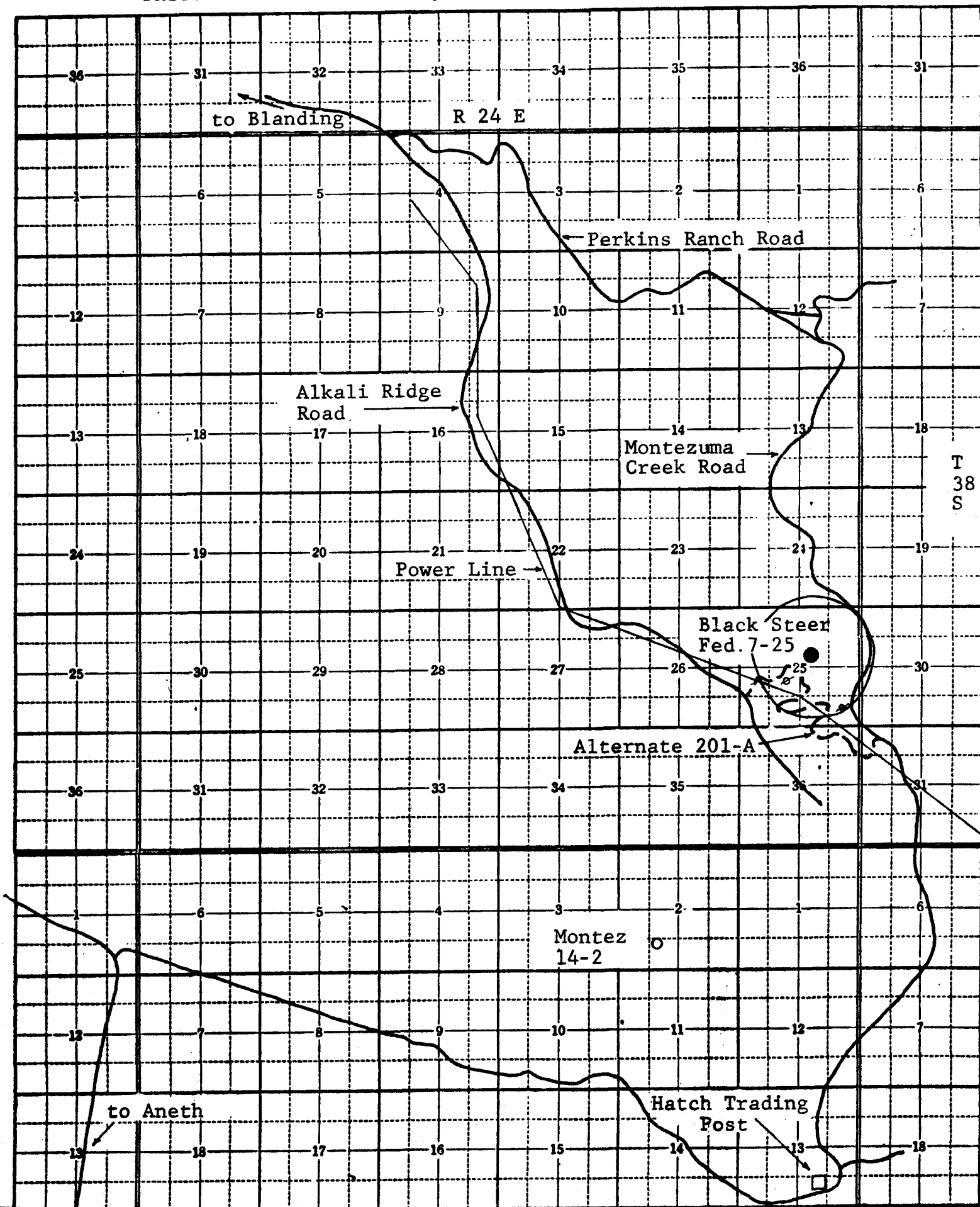
Brook J. Phifer
BROOK J PHIFER, Vice President, Production

Dec 21, 1988
DATE

SLJ
12-19-88

Axem Resources Incorporated
Black Steer Federal 7-25
San Juan County, Utah

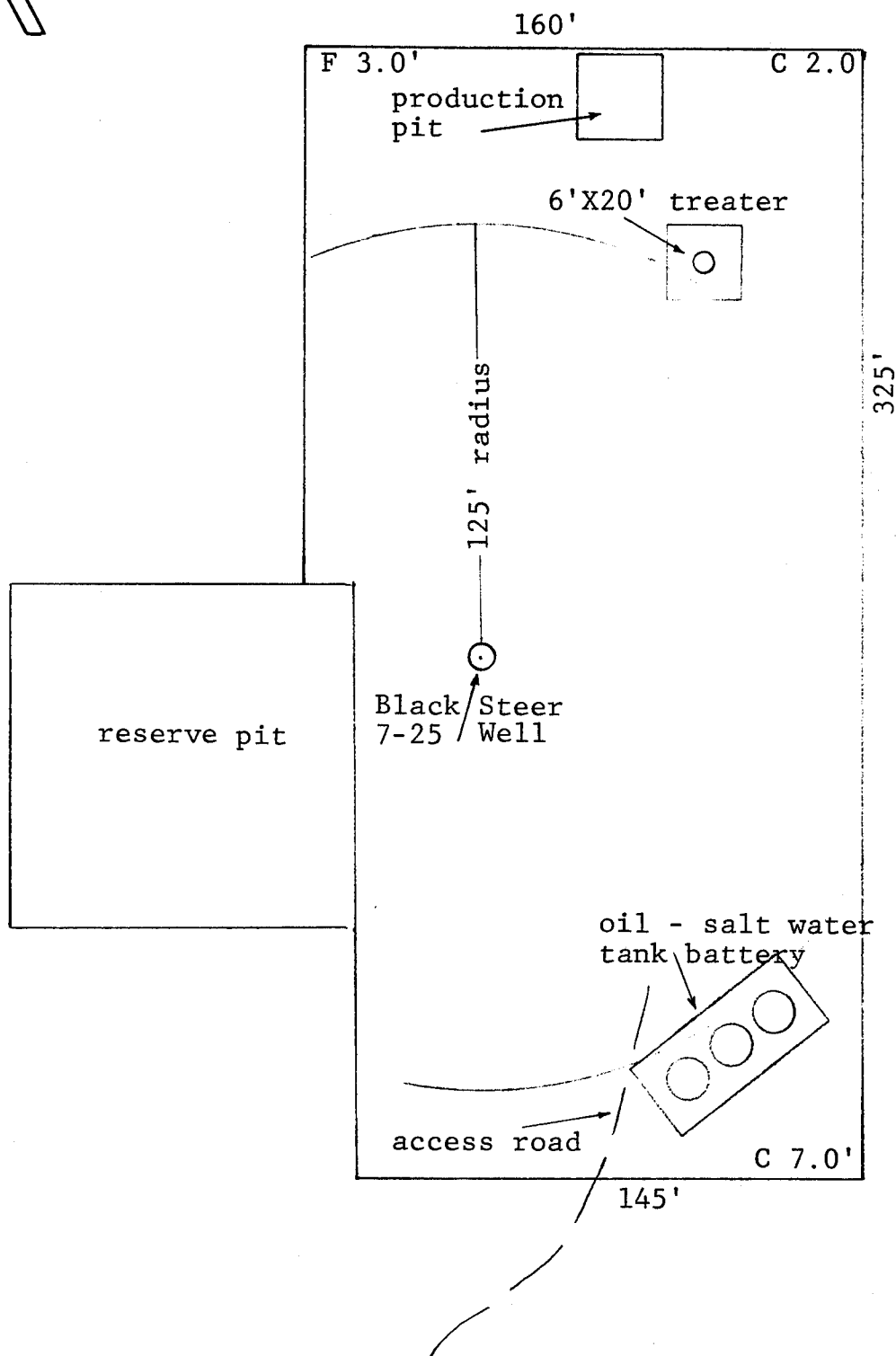
Sketch of San Juan County roads to be used for access



BLACK STEER FEDERAL 7-25

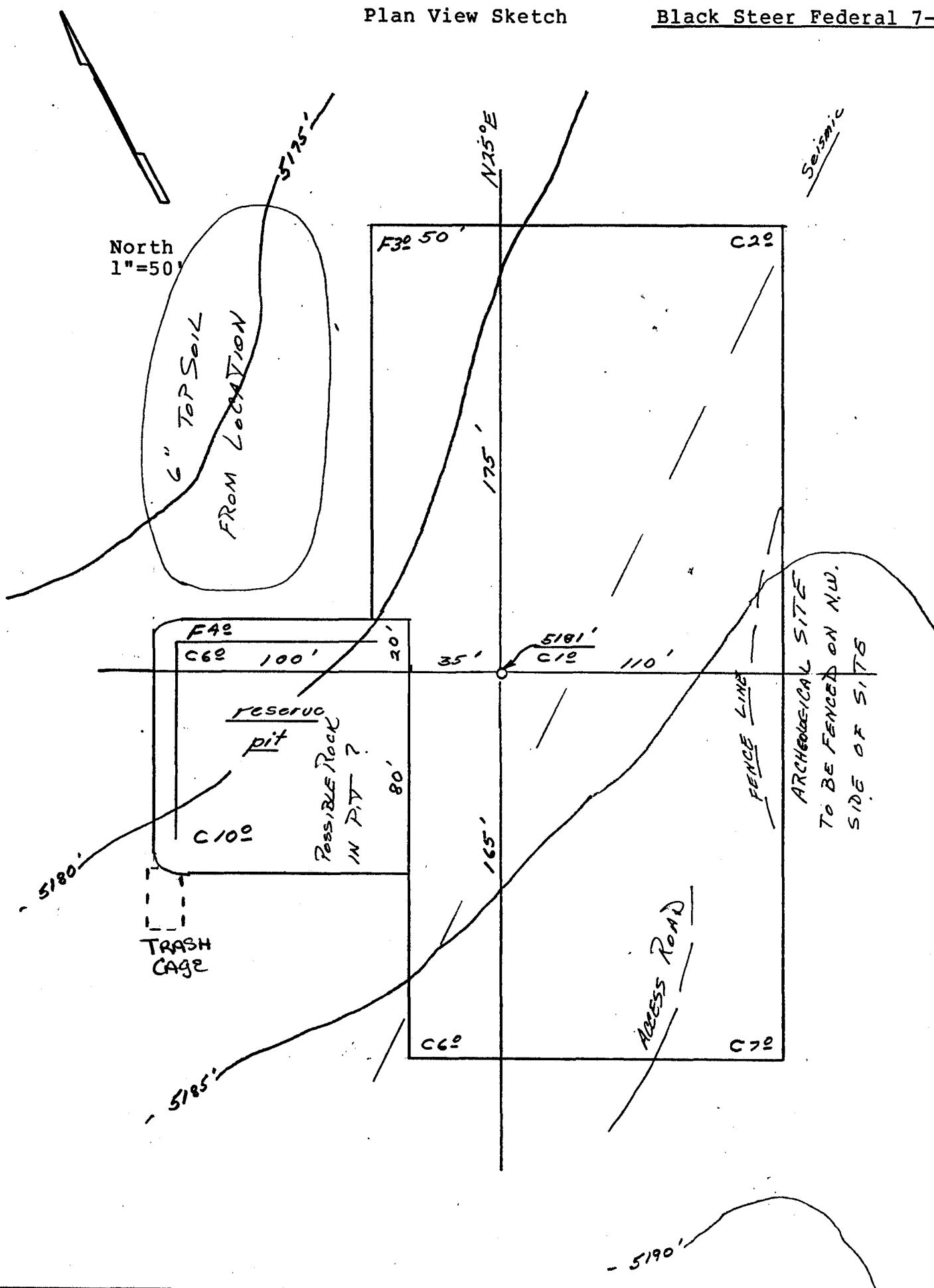
approximate location of
production facilities

scale : 1" = 50'





Plan View Sketch

Black Steer Federal 7-25

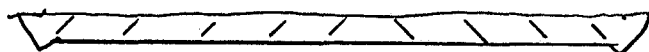
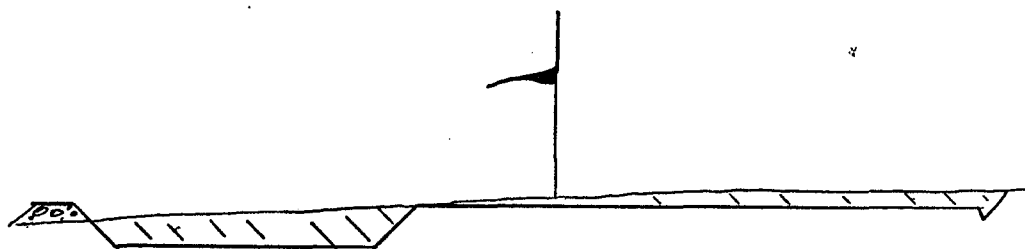


Cross Section

Black Steer Federal 7-25

Cut 
Fill 

1"=50' Horz. & Vert.





Axem

Resources Incorporated

December 12, 1988

U. S. Department of Interior
Bureau of Land Management
P.O. Box 970
Moab, Utah 84532

Attention: Ms. Carol Freudinger

Re: Operations on LS. U 64081
Township 38 South, Range 24 East
Section 25: SW $\frac{1}{4}$ NE $\frac{1}{4}$
San Juan County, Utah

Gentlemen:

Axem Resources Incorporated has entered into contractual arrangements with Coastal Oil and Gas Corporation, the record title holder of lease #U 64081 whereby Axem is authorized to enter onto the north half of Section 25 as referenced and conduct oil and gas drilling and production operations thereon as operator. Axem Resources Incorporated is bonded, authorized to do business in Utah and otherwise eligible and authorized to act as operator on the said acreage.

Should you need or require any additional information in support of this letter, please contact the undersigned. We will be operating under Bond # 6101473464, a copy of which is enclosed.

Very truly yours,

AXEM RESOURCES INCORPORATED

Christopher D. Blair
Vice President - Land

GAC/CDB:ns

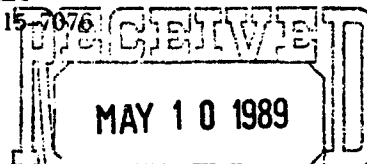
Enclosure

cc: Coastal Oil & Gas Corp., Attention: Ray Anderson



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
COLORADO STATE OFFICE
2850 YOUNGFIELD STREET
LAKEWOOD, COLORADO 80215-7076



AXEM - DENVER

CO-943A(KP)
3104
BLM Bond No.
CO-0780

DECISION

MAY 6 1988

Principal: Axem Resources Inc.
7800 East Union Ave.
Suite 1100
Denver, CO 80237

Surety ID No.: 610 147346 4

Amount: \$150,000

Surety: The North River Insurance Co.

Date Executed: March 15, 1988

Agent: Betty Hahn
P.O. Box 2639
Dallas, TX 75221

Rider No. 1: Prior Bonds

Rider No. 2: Geophysical Exploration

Nationwide Oil and Gas Bond and Riders Accepted

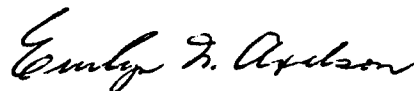
The above identified bond and riders have been examined and found satisfactory. They are accepted effective April 6, 1988.

An original and two copies of the bond and riders have been received by this office. We are retaining one for our file and returning two to the principal. Rider No. 1 assumes all outstanding liability under prior Montana statewide bond No. 872293, North Dakota statewide bond No. 851465, and Wyoming statewide bond No. 851454. Rider No. 2 extends coverage of the bond to include geophysical exploration operations. A copy of the request for release of the prior bonds has been sent to the Montana and Wyoming state offices.

The bond constitutes coverage for all interests of the principal in Federal oil and gas leases, except leases in the National Petroleum Reserve in Alaska. Coverage also extends to any lease on which the principal has been designated or approved as operator. Federal leases do not include Indian leases.

Coverage under this bond, however, does not extend to additional principals, such as assignees of all or part of the principal's interests in any lease, nor will the coverage extend to any lands where the principal is the unit operator but does not hold the record title or the operating rights in such lands, either alone or together with other parties, all of whose interests are covered by appropriate bonds.

The bond will be maintained by this office. Termination of liability under the bond will be permitted only after this office is satisfied that either there is no outstanding obligation covered by the bond or satisfactory replacement bonding coverage has been furnished.



Evelyn W. Axelson
Chief, Mineral Leasing Section

Form 3000-4
(June 1987)
(Formerly
3104-1, 3104-2, 3104-8,
3106-4, 3200-12,
3200-13, 3200-16)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL AND GAS OR GEOTHERMAL LEASE BOND

Act of February 25, 1920 (30 U.S.C. 181 et seq.)
Act of August 7, 1947 (30 U.S.C. 351-359)
Department of the Interior Appropriations Act, FY 1981 (94 Stat. 2959)
Act of December 24, 1970 (30 U.S.C. 1001-1025)
Other Oil and Gas and Geothermal Leasing Authorities as Applicable

Bond Number

610 147346 4

Lease Serial Number (For Individual Bond Only)

CHECK ONE:

☒ OIL AND GAS

☐ GEOTHERMAL RESOURCES

CHECK ONE:

☒ SURETY BOND

KNOW ALL BY THESE PRESENTS, THAT Axem Resources Incorporated

(name)

of 7800 East Union Avenue, Suite 1100, Denver, CO 80237

(address)

as principal, and THE NORTH RIVER INSURANCE COMPANY

(name)

of P. O. Box 2639, Dallas, TX 75221

(address)

are held and firmly bound unto the United States of America in the sum of One Hundred Fifty Thousand and no/100ths

dollars (\$ 150,000.00),

lawful money of the United States, which may be increased or decreased by a rider hereto executed in the same manner as this bond.

☐ PERSONAL BOND

IN THE FORM OF (CHECK ONE)

☐ CASH or

☐ NEGOTIABLE SECURITIES

KNOW ALL BY THESE PRESENTS, That

(name)

of _____, as obligor, is held and firmly

(address)

bound unto the United States of America in the sum of _____

dollars (\$ _____), lawful money of the United States which sum may be

increased or decreased by a rider hereto executed in the same manner as this bond.

The obligor, in order to more fully secure the United States in the payment of the aforesaid sum, hereby pledges as security therefore United States negotiable securities or cash, of a par value equal to the amount specified.

The obligor, pursuant to the authority conferred by Section 1 of the Act of September 13, 1982 (31 U.S.C. 9303), does hereby constitute and appoint the Secretary of the Interior to act as his attorney. The interest accruing on the United States securities deposited, in the absence of any default in the performance of any of the conditions, or stipulations set forth in this bond and the instrument(s) granting rights and interests in Federal lands, must be paid to the obligor. The obligor hereby for himself/herself, any heirs, executors, administrators, successors, and assigns, joint and severally, ratifies and confirms whatever the Secretary shall do by virtue of these presents.

The principal/surety shall apply this bond or the Secretary shall transfer this deposit as security for the faithful performance of any and all of the conditions and stipulations as set forth in this bond and the instruments granting rights and interests in Federal lands. In the case of any default in the performance of the conditions and stipulations of such undertaking, it is agreed that: (1) for a Surety Bond, the surety/principal shall apply the bond or any portion thereof; (2) for a Personal Bond, the Secretary shall have full power to assign, appropriate, apply or transfer the deposit or any portion thereof, to the satisfaction of any damages, assessments, late payment charges, penalties, or deficiencies arising by reason of such default.

This bond is required for the use and benefit of (1) the United States; (2) the owner of any of the land subject to the coverage of this bond, who has a statutory right to compensation in connection with a reservation of the oil and gas and geothermal deposits to the United States; (3) any lessee, permittee, or contractor, under a lease, permit, or resource sale contract issued, or to be issued, by the United States covering the same land subject to this bond, covering the use of the surface or the prospecting for, or the development of other mineral deposits in any portion of such land, to be paid to the United States. For such payment, well and truly to be made, we bind ourselves and each of our heirs, executors, administrators, successors, and assigns, jointly and severally.

CHECK ONE:

☒ NATIONWIDE BOND — This bond shall cover all operations conducted on Federal land by or on behalf of the principal/obligor in the United States except the National Petroleum Reserve in Alaska (NPR-A) and provided a rider is obtained, coverage of multiple exploration operations.

☐ STATEWIDE BOND — This bond shall cover all operations conducted on Federal land by or on behalf of the principal/obligor except the NPR-A and, provided a rider is obtained, also shall cover multiple explorations within the single State of _____

☐ INDIVIDUAL BOND — This bond shall cover all operations conducted by or on behalf of the principal/obligor on the single lease identified by serial number above.

NATIONAL PETROLEUM RESERVE IN ALASKA (NPR-A) BOND — This bond shall cover:

☐ NPR-A LEASE BOND — The terms and conditions of a single lease.

☐ NPR-A WIDE BOND — The terms and conditions of all leases, and provided a rider is obtained, coverage of multiple exploration operations.

(Continued on reverse)

BOND CONDITIONS

The conditions of the foregoing obligations are such that:

WHEREAS the obligor/principal has an interest in a lease(s) and/or responsibility for operations on a lease(s) issued under the Acts cited in this bond; and

WHEREAS the obligor/principal and surety agree(s) that without notice to the obligor/surety the coverage of this bond, in addition to the present holding(s) of and/or authorization(s) granted to the obligor/principal, shall extend to and include:

1. Any lease(s) hereafter issued to or acquired by the obligor/principal except under individual lease bonds, the coverage is to be confined to the obligor's/principal's holding(s) and/or authorization(s) granted under the Acts cited in this bond, and to become effective immediately upon such authorization, approval or issuance of a transfer in favor of the obligor/principal; and

2. Any transfer(s) of operating rights or operating agreement(s) hereafter entered into or acquired by the obligor/principal affecting lease(s); and

3. Any designation subsequent hereto of the obligor/principal as operator of a lessee under a lease(s) issued pursuant to the Acts cited in this bond; and

Provided, That the surety may elect to terminate the additional coverage authorized under this paragraph. Such termination will become effective 30 days after the BLM receives notice of the election to terminate. After the termination becomes effective, the additional interest(s) identified in this paragraph will not be covered by this bond; and

WHEREAS the obligor/surety hereby waives any right to notice of, and agrees that this bond shall remain in full force and effect notwithstanding:

1. Any assignment(s) of an undivided interest in any part or all of the lands in the lease(s), in which event the assignee(s) shall be considered to be coprincipal(s) on this bond as fully and to the same extent as though his/her or their duly authenticated signatures appeared thereon; and

2. Any assignment(s) of 100% of some of the lands described in the lease(s), the bond to remain in full force and effect only as to the lands retained in the lease(s); and

3. Any transfer(s) either in whole or in part, of any or all of the operating rights/agreements and further agrees to remain bound under this bond as to the interests in the operating rights/agreements retained by the principal; and

4. Any modification of a lease or operating right/agreement, or obligation thereunder, whether made or effected by commitment of lease or operating right/agreement to unit, cooperative, communitization or storage agreements, or development contracts, suspensions of operations or production, waivers, suspensions or changes in rental, minimum royalty and royalties, compensatory royalty payments, or otherwise; and

5. Any extension of a lease(s) covered by this bond, such coverage to continue without any interruption due to the expiration of the term set forth in the lease(s);

WHEREAS the obligor/principal and surety hereby agree(s) that notwithstanding the termination of any lease(s), operating right(s)/agreements or designations as operator by this bond, whether the termination is by operation of law or otherwise, the bond shall remain in full force and effect as to the terms and conditions of all remaining leases, obligations, operating agreements, or designations covered by the bond; and

WHEREAS the obligor/principal, as to any lease or part of a lease for lands to which he/she has been designated as operator, or approved as operator, in consideration of being permitted to furnish this bond in lieu of the lessees, agrees and by these presents does hereby bind himself/herself to fulfill on behalf of each lessee all obligations of such for the entire leasehold in the same manner and to the same extent as though he/she were the lessee; and

WHEREAS the obligor/principal and surety agree(s) that the neglect or forbearance of said lessor in enforcing, as against the lessees of such lessor, the payment of rentals or royalties or the performance of any other term, condition or agreement of the lease(s) shall not, in any way, release the obligor/principal and surety, or either of them from any liability under this bond; and

WHEREAS the obligor/principal and surety agree(s) that in the event of any default under the lease(s) the lessor may commence and prosecute any claim, suit, or other proceeding against the obligor/principal and surety or either of them, without the necessity of joining the lessees(s); and

WHEREAS if the obligor/principal fails to comply with any provisions of an oil and gas lease, and the noncompliance continues for thirty (30) days after written notice thereof, such lease shall be subject to cancellation and the obligor/principal shall also be subject to applicable provisions and penalties of the Federal Oil and Gas Royalty Management Act (30 U.S.C. 1701 et seq.). This provision shall not be construed to prevent the exercise by the United States of any other legal and equitable remedy, including waiver of the default.

NOW, THEREFORE If said obligor/principal, his/her heirs, executors administrators, successors, or assigns shall in all respects faithfully comply with all of the provisions of the instrument(s) granting rights and interests in Federal lands referred to above, then the obligations are to be void; otherwise to remain in full force and effect.

4. Signed this 15th day of March, 19 88, in the presence of:

NAMES AND ADDRESSES OF WITNESSES

Attest:

(Seal)

Phyllis Smith
Assistant Secretary

J. O. Hanks, Box 2639, Dallas, TX 75221

If this bond is executed by a corporation, it must bear the seal of that corporation.

Axem Resources Incorporated,
a Delaware corporation

By Carolyn A. Spaur (L.S.)
(Principal Obligor)

Carolyn A. Spaur, Vice President-Administrator
7800 East Union Ave., #1100, Denver, CO 80237-
(Business Address) 2757

Betty Hahn (L.S.)
(Surety) Attorney-in-Fact
P. O. Box 2639, Dallas, TX 75221
(Business Address)

RIDER TO NATIONWIDE BOND

It is understood and agreed that the obligee of this Bond No. 610 147346 4 with Axem Resources Incorporated, as principal, and THE NORTH RIVER INSURANCE COMPANY as surety, in no way has diminished the guarantees afforded therein, and the surety on this bond assumes all liability outstanding under the prior bonds.

The prior bonds are as follows:

Axem Resources Incorporated

<u>Bond No.</u>	<u>State</u>	<u>Amount</u>
872293	Montana	\$25,000
851465	North Dakota	\$25,000
851454	Wyoming	\$25,000

PRINCIPAL

ATTEST:

Phyllis Smith
7800 East Union Ave. #1100
Denver, CO 80237

Phyllis Smith
Assistant Secretary

Axem Resources Incorporated,
A Delaware Corporation

By:

Carolyn A. Spaur 3/15/88
Carolyn A. Spaur,
Vice President - Administration

Principal Address:

7800 East Union Avenue, #1100
Denver, CO 80237

SURETY

Witness:

Jo Haulst
Box 2639, Dallas, TX 75221
(Address)

THE NORTH RIVER INSURANCE COMPANY

By:

Betty Hahn
Betty Hahn, Attorney-in-Fact
P. O. Box 2639, Dallas, TX 75221
Surety Address:

APP/bondrider

NATIONWIDE OIL AND GAS LEASE BOND RIDER

Oil and Gas Exploration Operations

Coverage under Nationwide Oil and Gas Lease Bond, Serial Number 610 147346 4 filed with Bureau of Land Management at the Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado 80215, is hereby extended to include oil and gas exploration operations as prescribed by the regulations 43 CFR 3045. Signed this 15th day of March, 1988, in the presence of:

**NAMES AND ADDRESSES OF
WITNESSES:**

Attest:

Phyllis Smith
Phyllis Smith
Assistant Secretary

(Seal)

7800 East Union Ave., #1100
Denver, CO 80237

PRINCIPAL:

Axem Resources Incorporated,
a Delaware Corporation

By: *Carolyn A. Spaur*
Carolyn A. Spaur,
Vice President - Administration

7800 East Union Avenue, #1100
Denver, CO 80237

SURETY

THE NORTH RIVER INSURANCE COMPANY

JO Haulit
(Signature of witness)

Betty Hahn
Signature of surety)
Betty Hahn, Attorney-in-Fact

Box 2639, Dallas, TX 75221
Address

P. O. Box 2639, Dallas, TX 75221
Business Address

POWER OF ATTORNEY
THE NORTH RIVER INSURANCE COMPANY
PRINCIPAL OFFICE, TOWNSHIP OF MORRIS, N.J.

KNOW ALL MEN BY THESE PRESENTS: That THE NORTH RIVER INSURANCE COMPANY ("Company") a corporation duly organized and existing under the laws of the State of New Jersey, and having its Principal office in the Township of Morris, State of New Jersey, has made, constituted and appointed, and does by these presents make, constitute and appoint

J. D. Hamlet, L. D. Beck, Tommie Abshier, J. B. LeFlore, L. M. Satterwhite, Pat Tijerina, K. Perez and Betty Hahn of Dallas, Texas, each

its true and lawful Agent(s) and Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, seal, acknowledge and deliver: Any and all bonds and undertakings -----

and to bind the Company thereby as fully and to the same extent as if such bonds had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office in their own proper persons.

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind the Company except in the manner and to the extent therein stated.

This Power of Attorney revokes all previous powers issued in behalf of the attorney(s)-in-fact named above.

IN WITNESS WHEREOF The North River Insurance Company has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 14th day of January, 1987.



Attest:

THE NORTH RIVER INSURANCE COMPANY

Assistant Secretary

Richard A. Annese

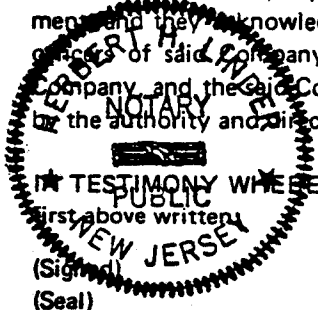
Vice President

James S. Zachowski

STATE OF NEW JERSEY)

COUNTY OF MORRIS) ss.:

On this 14th day of January, 1987, before the subscriber, a duly qualified Notary Public of the State of New Jersey, came the above-mentioned Vice President and Assistant Secretary of The North River Insurance Company, to me personally known to be the officers described in, and who executed the preceding instrument and they acknowledged the execution of the same, and being by me duly sworn, depose and said, that they are the officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and their signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Company.



IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal at the Township of Morris, the day and year first above written

HERBERT H. LINDER

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires April 25, 1988

Notary Public

This Power of Attorney is granted pursuant to Article V. of the By-Laws of THE NORTH RIVER INSURANCE COMPANY now in full force and effect.

ARTICLE V., Execution of Instruments: "The Chairman of the Board, Vice-Chairman of the Board, President, or any Vice-President, in conjunction with the Secretary, or any Secretary, if more than one shall be appointed by the Board, or an Assistant Secretary, shall have power on behalf of the Corporation:

(a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;

(b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation."

This Power of Attorney is signed and sealed under and by the authority of Article IV., Section 9. of the By-Laws of THE NORTH RIVER INSURANCE COMPANY as now in full force and effect.

ARTICLE IV. Section 9. Facsimile Signatures: "The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed facsimile, lithographed, or otherwise produced. . . . The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued."

CERTIFICATE

State of New Jersey
County of Morris

I, the undersigned, Assistant Secretary of THE NORTH RIVER INSURANCE COMPANY, DO HEREBY CERTIFY that the foregoing POWER OF ATTORNEY remains in full force and effect and has not been revoked and furthermore that the above quoted abstracts of Article V. and Article IV., Section 9. of the By-Laws of the Company are now in full force and effect.

In Testimony Whereof, I have hereunto subscribed my name and affixed the corporate seal of the said Company, this

_____ 15th _____ day of _____ March _____ 19 88 _____

By


Assistant Secretary
John K. Stewart

Form 3000-4
(June 1987)
(Formerly
3104-1, 3104-2, 3104-8,
3106-4, 3200-12,
3200-13, 3200-16)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL AND GAS OR GEOTHERMAL LEASE BOND

Act of February 25, 1920 (30 U.S.C. 181 et seq.)
Act of August 7, 1947 (30 U.S.C. 351-359)
Department of the Interior Appropriations Act, FY 1981 (94 Stat. 2959)
Act of December 24, 1970 (30 U.S.C. 1001-1025)
Other Oil and Gas and Geothermal Leasing Authorities as Applicable

Bond Number

610 147346 4

Lease Serial Number (For Individual Bond Only)

CHECK ONE:

☒ OIL AND GAS

☐ GEOTHERMAL RESOURCES

CHECK ONE:

☒ SURETY BOND

KNOW ALL BY THESE PRESENTS, THAT Axem Resources Incorporated

(name)

of 7800 East Union Avenue, Suite 1100, Denver, CO 80237

(address)

as principal, and THE NORTH RIVER INSURANCE COMPANY

(name)

of P. O. Box 2639, Dallas, TX 75221

(address)

, as surety.

are held and firmly bound unto the United States of America in the sum of One Hundred Fifty Thousand and no/100ths

dollars (\$ 150,000.00).

lawful money of the United States, which may be increased or decreased by a rider hereto executed in the same manner as this bond.

☐ PERSONAL BOND

IN THE FORM OF (CHECK ONE)

☐ CASH or

☐ NEGOTIABLE SECURITIES

KNOW ALL BY THESE PRESENTS, That _____

(name)

of _____, as obligor, is held and firmly

(address)

bound unto the United States of America in the sum of _____

dollars (\$ _____), lawful money of the United States which sum may be

increased or decreased by a rider hereto executed in the same manner as this bond.

The obligor, in order to more fully secure the United States in the payment of the aforesaid sum, hereby pledges as security therefore United States negotiable securities or cash, of a par value equal to the amount specified.

The obligor, pursuant to the authority conferred by Section 1 of the Act of September 13, 1982 (31 U.S.C. 9303), does hereby constitute and appoint the Secretary of the Interior to act as his attorney. The interest accruing on the United States securities deposited, in the absence of any default in the performance of any of the conditions, or stipulations set forth in this bond and the instrument(s) granting rights and interests in Federal lands, must be paid to the obligor. The obligor hereby for himself/herself, any heirs, executors, administrators, successors, and assigns, joint and severally, ratifies and confirms whatever the Secretary shall do by virtue of these presents.

The principal/surety shall apply this bond or the Secretary shall transfer this deposit as security for the faithful performance of any and all of the conditions and stipulations as set forth in this bond and the instruments granting rights and interests in Federal lands. In the case of any default in the performance of the conditions and stipulations of such undertaking, it is agreed that: (1) for a Surety Bond, the surety/principal shall apply the bond or any portion thereof; (2) for a Personal Bond, the Secretary shall have full power to assign, appropriate, apply or transfer the deposit or any portion thereof, to the satisfaction of any damages, assessments, late payment charges, penalties, or deficiencies arising by reason of such default.

This bond is required for the use and benefit of (1) the United States; (2) the owner of any of the land subject to the coverage of this bond, who has a statutory right to compensation in connection with a reservation of the oil and gas and geothermal deposits to the United States; (3) any lessee, permittee, or contractor, under a lease, permit, or resource sale contract issued, or to be issued, by the United States covering the same land subject to this bond, covering the use of the surface or the prospecting for, or the development of other mineral deposits in any portion of such land, to be paid to the United States. For such payment, well and truly to be made, we bind ourselves and each of our heirs, executors, administrators, successors, and assigns, jointly and severally.

CHECK ONE:

☒ **NATIONWIDE BOND** — This bond shall cover all operations conducted on Federal land by or on behalf of the principal/obligor in the United States except the National Petroleum Reserve in Alaska (NPR-A) and provided a rider is obtained, coverage of multiple exploration operations.

☐ **STATEWIDE BOND** — This bond shall cover all operations conducted on Federal land by or on behalf of the principal/obligor except the NPR-A and, provided a rider is obtained, also shall cover multiple explorations within the single State of _____

☐ **INDIVIDUAL BOND** — This bond shall cover all operations conducted by or on behalf of the principal/obligor on the single lease identified by serial number above.

NATIONAL PETROLEUM RESERVE IN ALASKA (NPR-A) BOND — This bond shall cover:

☐ **NPR-A LEASE BOND** — The terms and conditions of a single lease.

☐ **NPR-A WIDE BOND** — The terms and conditions of all leases, and provided a rider is obtained, coverage of multiple exploration operations.

(Continued on reverse)

BOND CONDITIONS

The conditions of the foregoing obligations are such that:

WHEREAS the obligor/principal has an interest in a lease(s) and/or responsibility for operations on a lease(s) issued under the Acts cited in this bond; and

WHEREAS the obligor/principal and surety agree(s) that without notice to the obligor/surety the coverage of this bond, in addition to the present holding(s) of and/or authorization(s) granted to the obligor/principal, shall extend to and include:

1. Any lease(s) hereafter issued to or acquired by the obligor/principal except under individual lease bonds, the coverage is to be confined to the obligor's/principal's holding(s) and/or authorization(s) granted under the Acts cited in this bond, and to become effective immediately upon such authorization, approval or issuance of a transfer in favor of the obligor/principal; and

2. Any transfer(s) of operating rights or operating agreement(s) hereafter entered into or acquired by the obligor/principal affecting lease(s); and

3. Any designation subsequent hereto of the obligor/principal as operator of a lessee under a lease(s) issued pursuant to the Acts cited in this bond; and

Provided, That the surety may elect to terminate the additional coverage authorized under this paragraph. Such termination will become effective 30 days after the BLM receives notice of the election to terminate. After the termination becomes effective, the additional interest(s) identified in this paragraph will not be covered by this bond; and

WHEREAS the obligor/surety hereby waives any right to notice of, and agrees that this bond shall remain in full force and effect notwithstanding:

1. Any assignment(s) of an undivided interest in any part or all of the lands in the lease(s), in which event the assignee(s) shall be considered to be coprincipal(s) on this bond as fully and to the same extent as though his/her or their duly authenticated signatures appeared thereon; and

2. Any assignment(s) of 100% of some of the lands described in the lease(s), the bond to remain in full force and effect only as to the lands retained in the lease(s); and

3. Any transfer(s) either in whole or in part, of any or all of the operating rights/agreements and further agrees to remain bound under this bond as to the interests in the operating rights/agreements retained by the principal; and

4. Any modification of a lease or operating right/agreement, or obligation thereunder, whether made or effected by commitment of lease or operating right/agreement to unit, cooperative, communitization or storage agreements, or development contracts, suspensions of operations or production, waivers, suspensions or changes in rental, minimum royalty and royalties, compensatory royalty payments, or otherwise; and

5. Any extension of a lease(s) covered by this bond, such coverage to continue without any interruption due to the expiration of the term set forth in the lease(s);

WHEREAS the obligor/principal and surety hereby agree(s) that notwithstanding the termination of any lease(s), operating right(s)/agreements or designations as operator by this bond, whether the termination is by operation of law or otherwise, the bond shall remain in full force and effect as to the terms and conditions of all remaining leases, obligations, operating agreements, or designations covered by the bond; and

WHEREAS the obligor/principal, as to any lease or part of a lease for lands to which he/she has been designated as operator, or approved as operator, in consideration of being permitted to furnish this bond in lieu of the lessees, agrees and by these presents does hereby bind himself/herself to fulfill on behalf of each lessee all obligations of such for the entire leasehold in the same manner and to the same extent as though he/she were the lessee; and

WHEREAS the obligor/principal and surety agree(s) that the neglect or forbearance of said lessor in enforcing, as against the lessees of such lessor, the payment of rentals or royalties or the performance of any other term, condition or agreement of the lease(s) shall not, in any way, release the obligor/principal and surety, or either of them from any liability under this bond; and

WHEREAS the obligor/principal and surety agree(s) that in the event of any default under the lease(s) the lessor may commence and prosecute any claim, suit, or other proceeding against the obligor/principal and surety or either of them, without the necessity of joining the lessee(s); and

WHEREAS if the obligor/principal fails to comply with any provisions of an oil and gas lease, and the noncompliance continues for thirty (30) days after written notice thereof, such lease shall be subject to cancellation and the obligor/principal shall also be subject to applicable provisions and penalties of the Federal Oil and Gas Royalty Management Act (30 U.S.C. 1701 et seq.). This provision shall not be construed to prevent the exercise by the United States of any other legal and equitable remedy, including waiver of the default.

NOW, THEREFORE If said obligor/principal, his/her heirs, executors administrators, successors, or assigns shall in all respects faithfully comply with all of the provisions of the instrument(s) granting rights and interests in Federal lands referred to above, then the obligations are to be void; otherwise to remain in full force and effect.

4. Signed this 15th day of March, 19 88 in the presence of:

NAMES AND ADDRESSES OF WITNESSES

Attest: Phyllis Smith

(Seal) Phyllis Smith
Assistant Secretary

L. O. Hamilton, Box 2639, Dallas, TX 75221

If this bond is executed by a corporation, it must bear the seal of that corporation.

Axem Resources Incorporated,
a Delaware corporation

By Carolyn A. Spaur (L.S.)
(Principal Obligor)

Carolyn A. Spaur, Vice President-Administrative
7800 East Union Ave., #1100, Denver, CO 80237-
(Business Address) 2757

Betty Hahn (L.S.)
(Surety) Attorney-in-Fact
P. O. Box 2639, Dallas, TX 75221
(Business Address)

RIDER TO NATIONWIDE BOND

It is understood and agreed that the obligee of this Bond No. 610 147346 4 with Axem Resources Incorporated, as principal, and THE NORTH RIVER INSURANCE COMPANY as surety, in no way has diminished the guarantees afforded therein, and the surety on this bond assumes all liability outstanding under the prior bonds.

The prior bonds are as follows:

Axem Resources Incorporated

<u>Bond No.</u>	<u>State</u>	<u>Amount</u>
872293	Montana	\$25,000
851465	North Dakota	\$25,000
851454	Wyoming	\$25,000

PRINCIPAL

Axem Resources Incorporated,
A Delaware Corporation

ATTEST:

Phyllis Smith
7800 East Union Ave. #1100
Denver, CO 80237
Phyllis Smith
Assistant Secretary

By:

Carolyn A. Spaur 3/15/88
Carolyn A. Spaur,
Vice President - Administration

Principal Address:

7800 East Union Avenue, #1100
Denver, CO 80237

SURETY

Witness:

Ed Haurbt
Box 2639, Dallas, TX 75221
(Address)

THE NORTH RIVER INSURANCE COMPANY

By:

Betty Hahn
Betty Hahn, Attorney-in-Fact

P. O. Box 2639, Dallas, TX 75221

Surety Address:

APP/bondrider

NATIONWIDE OIL AND GAS LEASE BOND RIDER

Oil and Gas Exploration Operations

Coverage under Nationwide Oil and Gas Lease Bond, Serial Number 610 147346 4
filed with Bureau of Land Management at the Colorado State Office, 2850 Youngfield
Street, Lakewood, Colorado 80215, is hereby extended to include oil and gas exploration
operations as prescribed by the regulations 43 CFR 3045. Signed this 15th day of
March, 1988, in the presence of:

**NAMES AND ADDRESSES OF
WITNESSES:**

Attest:

Phyllis Smith
Phyllis Smith
Assistant Secretary

(Seal)

7800 East Union Ave., #1100
Denver, CO 80237

PRINCIPAL:

Axem Resources Incorporated,
a Delaware Corporation

By: *Carolyn A. Spaur*
Carolyn A. Spaur,
Vice President - Administration

7800 East Union Avenue, #1100
Denver, CO 80237

SURETY

THE NORTH RIVER INSURANCE COMPANY

J. D. Smith
(Signature of witness)

Betty Hahn
Signature of surety)
Betty Hahn, Attorney-in-Fact

Box 2639, Dallas, TX 75221
Address

P. O. Box 2639, Dallas, TX 75221
Business Address

POWER OF ATTORNEY
THE NORTH RIVER INSURANCE COMPANY
PRINCIPAL OFFICE, TOWNSHIP OF MORRIS, N.J.

KNOW ALL MEN BY THESE PRESENTS: That THE NORTH RIVER INSURANCE COMPANY ("Company") a corporation duly organized and existing under the laws of the State of New Jersey, and having its Principal office in the Township of Morris, State of New Jersey, has made, constituted and appointed, and does by these presents make, constitute and appoint

J. D. Hamlet, L. D. Beck, Tommie Abshier, J. B. LeFlore, L. M. Satterwhite, Pat Tijerina, K. Perez and Betty Hahn of Dallas, Texas, each

its true and lawful Agent(s) and Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, seal, acknowledge and deliver: Any and all bonds and undertakings -----

and to bind the Company thereby as fully and to the same extent as if such bonds had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office in their own proper persons.

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind the Company except in the manner and to the extent therein stated.

This Power of Attorney revokes all previous powers issued in behalf of the attorney(s)-in-fact named above.

IN WITNESS WHEREOF The North River Insurance Company has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 14th day of January, 1987.



Attest:

THE NORTH RIVER INSURANCE COMPANY

Richard A. Annese

Assistant Secretary

Richard A. Annese

James S. Zachowski

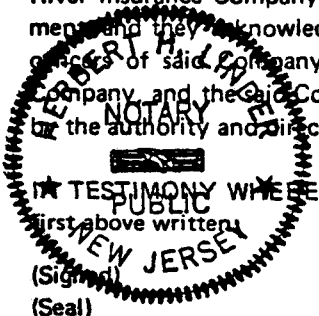
Vice President

James S. Zachowski

STATE OF NEW JERSEY)

COUNTY OF MORRIS) ss.:

On this 14th day of January, 1987, before the subscriber, a duly qualified Notary Public of the State of New Jersey, came the above-mentioned Vice President and Assistant Secretary of The North River Insurance Company, to me personally known to be the officers described in, and who executed the preceding instrument, and they acknowledged the execution of the same, and being by me duly sworn, deposed and said, that they are the officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and their signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Company.



★ TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal at the Township of Morris, the day and year

HERBERT H. LINDER

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires April 25, 1988

Herbert H. Linder

Notary Public

This Power of Attorney is granted pursuant to Article V. of the By-Laws of THE NORTH RIVER INSURANCE COMPANY now in full force and effect.

ARTICLE V., Execution of Instruments: "The Chairman of the Board, Vice-Chairman of the Board, President, or any Vice-President, in conjunction with the Secretary, or any Secretary, if more than one shall be appointed by the Board, or an Assistant Secretary, shall have power on behalf of the Corporation:

(a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;

(b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation."

This Power of Attorney is signed and sealed under and by the authority of Article IV., Section 9. of the By-Laws of THE NORTH RIVER INSURANCE COMPANY as now in full force and effect.

ARTICLE IV. Section 9. Facsimile Signatures: "The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed facsimile, lithographed, or otherwise produced. . . . The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued."

CERTIFICATE

State of New Jersey
County of Morris

I, the undersigned, Assistant Secretary of THE NORTH RIVER INSURANCE COMPANY, DO HEREBY CERTIFY that the foregoing POWER OF ATTORNEY remains in full force and effect and has not been revoked and furthermore that the above quoted abstracts of Article V. and Article IV., Section 9. of the By-Laws of the Company are now in full force and effect.

In Testimony Whereof, I have hereunto subscribed my name and affixed the corporate seal of the said Company, this

_____ 15th _____ day of _____ March _____ 19 88 _____.

By


Assistant Secretary
John K. Stewart

STATE ACTIONS

Mail to:
RDCC Coordinator
116 State Capitol
Salt Lake City, Utah 84114

-
1. ADMINISTERING STATE AGENCY
OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203
2. STATE APPLICATION IDENTIFIER NUMBER:
(assigned by State Clearinghouse)
-
3. APPROXIMATE DATE PROJECT WILL START:
Upon approval
-
4. AREAWIDE CLEARING HOUSE(s) RECEIVING STATE ACTIONS:
(to be sent out by agency in block 1)
Southeastern Utah Association of Local Governments
-
5. TYPE OF ACTION: ☐ Lease ☒ Permit ☐ License ☐ Land Aquisition
☐ Land Sale ☐ Land Exchange ☐ Other_____
-
6. TITLE OF PROPOSED ACTION:
Application for Permit to Drill
-
7. DESCRIPTION:
Axem Resources Incorporated proposes to drill a wildcat well, the Black Steer Federal #7-25, on federal lease number U-52656 in San Juan County, Utah. This action is being presented to RDCC for consideration of resource issues affecting state interests. The U.S. Bureau of Land Management is the primary administrative agency in this case and must issue approval to drill jointly with DOGM before operations can commence.
-
8. LAND AFFECTED (site location map required) (indicate county)
SW/4, NE/4, Section 25, Township 38 South, Range 24 East, San Juan County, Utah
-
9. HAS THE LOCAL GOVERNMENT(s) BEEN CONTACTED?
Unknown
-
10. POSSIBLE SIGNIFICANT IMPACTS LIKELY TO OCCUR:
Degree of impact is based on the discovery of oil or gas in commercial quantities.
-
11. NAME AND PHONE NUMBER OF DISTRICT REPRESENTATIVE FROM YOUR AGENCY NEAR PROJECT SITE, IF APPLICABLE:
Glenn Goodwin, Monticello, 587-2710
-
12. FOR FURTHER INFORMATION, CONTACT: 13. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL
John Baza
PHONE: 538-5340
DATE: 1/3/89
Petroleum Engineer
-

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN THIS CASE
(Other instructions on reverse side)

Form approved
Budget Bureau No. 1004-0136
Expires August 31, 1985

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL
WELL ☒

GAS
WELL ☐

OTHER ☐

SINGLE
WELL ☐

MULTIPLE
WELL ☐

2. NAME OF OPERATOR

Axem Resources Incorporated

3. ADDRESS OF OPERATOR

7800 E. Union Ave., Suite 1100, Denver, Colorado 80237

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

2170' FNL & 2170' FEL

At proposed prod. zone

SAME

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE

20 Miles Southeast of Blanding, Utah

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drlg. unit line, if any)

N/A

16. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

N/A

16. NO. OF ACRES IN LEASE

1000 GAS & MINING

17. NO. OF ACRES ASSIGNED

TO THIS WELL 80

19. PROPOSED DEPTH

6200

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

5181'GR

22. APPROX. DATE WORK WILL START*

January 1989

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	50'	95 Sxs
12-1/4"	8-5/8"	24#	2000'	1380 Sxs
7-7/8"	5-1/2"	17#	6200'	235 Sxs

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Shari L. Janava

TITLE

Materials Coordinator

DATE

12-22-88

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

TITLE

DATE

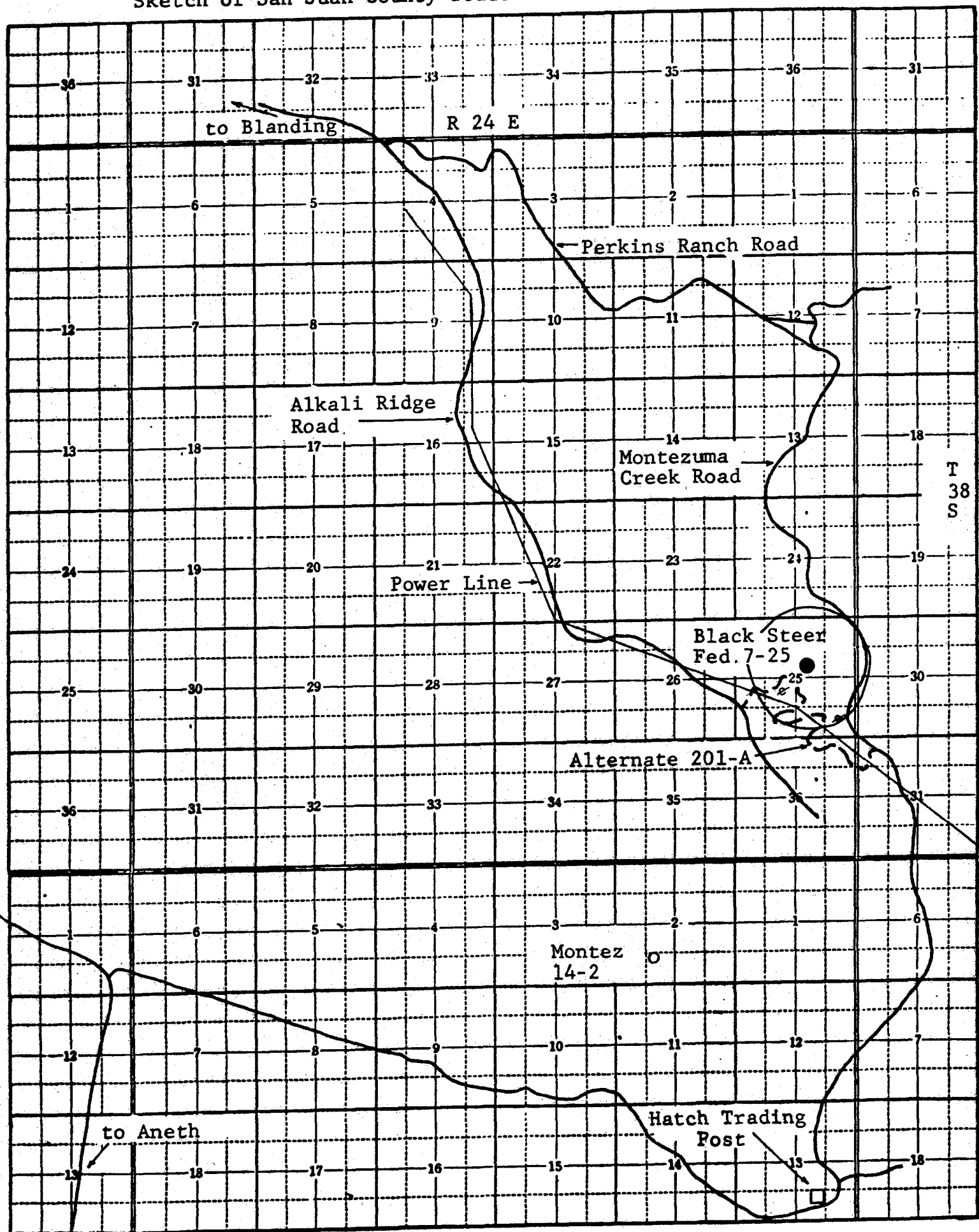
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Axem Resources Incorporated
Black Steer Federal 7-25
San Juan County, Utah

Sketch of San Juan County roads to be used for access



~~CONFIDENTIAL~~

OPERATOR Axem Resources Inc. DATE 12-27-88

WELL NAME Black Steer Fed. 7-25

SEC SWNE 25 T 38S R 24E COUNTY San Juan

43-037-31461
API NUMBER

Federal
TYPE OF LEASE

CHECK OFF:

☒ PLAT

☒ BOND

☒ NEAREST WELL

☒ LEASE

☒ FIELD

☒ POTASH OR OIL SHALE

PROCESSING COMMENTS:

No other well within 920' (no other well in sec. 25)

Need water permit.

RDC 12-29-88. Process 1-13-89

**CONFIDENTIAL
PERIOD
EXPIRED**

ON 5-1-90

APPROVAL LETTER:

SPACING: ☐ R615-2-3 N/A UNIT

☒ R615-3-2

☐ N/A CAUSE NO. & DATE

☐ R615-3-3

STIPULATIONS:

1. Water permit



Norman H. Bangerter

Governor

Dee C. Hansen

Executive Director

Dianne R. Nielson, Ph.D.

Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple

3 Triad Center, Suite 350

Salt Lake City, Utah 84180-1203

801-538-5340

January 13, 1989

Axem Resources Incorporated
7800 East Union Avenue, Suite 1100
Denver, Colorado 80237

Gentlemen:

Re: Black Steer Federal 7-25 - SW NE Sec. 25, T. 38S, R. 24E - San Juan County, Utah
2170' FNL, 2170' FEL

Approval to drill the referenced well is hereby granted in accordance with Rule R615-3-2, Oil and Gas Conservation General Rules, subject to the following stipulations:

1. Prior to commencement of drilling, receipt by the Division of evidence providing assurance of an adequate and approved supply of water as required by Chapter 3, Title 73, Utah Code Annotated.

In addition, the following actions are necessary to fully comply with this approval:

1. Spudding notification within 24 hours after drilling operations commence.
2. Submittal of an Entity Action Form within five working days following spudding and whenever a change in operations or interests necessitates an entity status change.
3. Submittal of the Report of Water Encountered During Drilling, Form OGC-8-X.
4. Prompt notification if it is necessary to plug and abandon the well. Notify John R. Baza, Petroleum Engineer, (Office) (801) 538-5340, (Home) 298-7695, or Jim Thompson, Lead Inspector, (Home) 298-9318.
5. Compliance with the requirements of Rule R615-3-22, Gas Flaring or Venting, Oil and Gas Conservation General Rules.

6. Prior to commencement of the proposed drilling operations, plans for facilities for disposal of sanitary wastes at the drill site shall be submitted to the local health department. These drilling operations and any subsequent well operations must be conducted in accordance with applicable state and local health department regulations. A list of local health departments and copies of applicable regulations are available from the Division of Environmental Health, Bureau of General Sanitation, telephone (801) 538-6121.
7. This approval shall expire one (1) year after date of issuance unless substantial and continuous operation is underway or an application for an extension is made prior to the approval expiration date.

The API number assigned to this well is 43-037-31461.

Sincerely,



R. J. Firth
Associate Director, Oil & Gas

lr
Enclosures
cc: Branch of Fluid Minerals
D. R. Nielson
WE14/1-2



Axem

Resources Incorporated

January 3, 1989

RECEIVED
JAN 06 1989

DIVISION OF
OIL, GAS & MINING

U. S. Department of the Interior
Bureau of Land Management
P. O. Box 970
Moab, Utah 84532

Attention: Carol Freudiger

Re: Black Steer Fed. #7-25
Section 25, T38S-R24E
San Juan County, Utah

Dear Carol:

Attached please find a sundry notice, and amended page 5 of our 8-point drilling plan. We are changing the hole size that will be drilled after the conductor casing is set. The hole will change to 11" from 12-1/4". If you have any questions concerning this or any other changes, please give me a call.

Sincerely,

AXEM RESOURCES INCORPORATED

Shari L. Janata

Shari L. Janata
Materials Coordinator

Attachments

cc: State of Utah
Division of Oil and Gas
355 West North Temple
Salt Lake City, Utah 84180

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS

(Do not use this form for proposals to drill or to deepen or plug well to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED
JAN 06 1989

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>		5. LEASE DESIGNATION AND SERIAL NO. U-64081	
2. NAME OF OPERATOR Axem Resources Incorporated		6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
3. ADDRESS OF OPERATOR 7800 E. Union Ave., Suite 1100, Denver, Colorado 80237		7. UNIT AGREEMENT NAME	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 2170' FNL & 2170' FEL		8. FARM OR LEASE NAME Black Steer Fed	
14. PERMIT NO.		9. WELL NO. 7-25	
15. ELEVATIONS (Show whether DF, RT, GR, etc.) 5181' GR		10. FIELD AND POOL, OR WILDCAT Wildcat	
		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T38S-R24E	
		12. COUNTY OR PARISH San Juan	
		13. STATE Utah	

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input checked="" type="checkbox"/>	(Other) <input type="checkbox"/>	
(Other) <input type="checkbox"/>		(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)	

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Change the size of hole drilled after Conductor casing is set, to 11" from 12-1/4".
Attached please find the amended page 5 of the 8 point drilling plan.

18. I hereby certify that the foregoing is true and correct

SIGNED Shari L. Janata TITLE Materials Coordinator DATE 01-03-89

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

AMENDED
Jan 3, 1989

Page 5

4. CASING & CEMENTING:

Hole Size	O.D	Weight	Grade	Type	Setting Depth (GL)
17-1/2"	13-3/8"	48#	H-40	ST&C	0' - 50'
11"	8-5/8"	24#	K-55	ST&C	0' - 2000'
7-7/8"	5-1/2"	17#	k-55	LT&C	0' - 6200'

Conductor Pipe (0'-50'): Cement to surface with = 95 sx.

Surface Casing (0' - 2000'): Cement to surface with =1380 sxs Class B.

Production Casing (0'- 6200'): Cement from 6,200' (TD) to 4,700' in one stage with =235 sx. Class B and Poz.

5. MUD PROGRAM

Depth	Type	Weight (ppg)	Viscosity	Fluid Loss
0' - 150'	Gel - lime slurry	8.5-9.0	35-50	No Control
150' - 2000'	water, flocculant, lime	8.4-8.6	26-32	No Control
2000' - 5570'	water, flocculant, lime	8.4-8.7	26-32	No Control
5570' - 6200'	Gel-Chemical, Caustic Soda	9.0-10.5	40-45	10.0 or 1e

6. CORING, TESTING, & LOGGING

No cores are planned. Drill stem tests may be run in the Upper Ismay and Lower Desert Creek zones if good shows are found. Cuttings will be collected every 30' from the surface to 5,000'. A two man mud logging unit will be present from 5,000' to TD. Cuttings will then be collected every 10'. The following logs may be run:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL
WELL ☒

GAS
WELL ☐

OTHER ☐

2. NAME OF OPERATOR

Axem Resources Incorporated

3. ADDRESS OF OPERATOR

7800 E. Union Ave., Suite 1100, Denver, Colorado 80237

4. LOCATION OF WELL (Report location clearly and in accordance with State requirements)

At surface

2170' FNL & 2170' FBL

At proposed prod. zone

SAME

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

20 Miles Southeast of Blanding, Utah

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drlg. unit line, if any)

N/A

16. NO. OF ACRES IN LEASE

1000

17. NO. OF ACRES ASSIGNED
TO THIS WELL

80

18. DISTANCE FROM PROPOSED LOCATION*

TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

N/A

19. PROPOSED DEPTH

6200

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

5181'GR

22. APPROX. DATE WORK WILL START*

January 1989

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	50'	95 Sxs
12-1/4"	8-5/8"	24#	2000'	1380 Sxs
7-7/8"	5-1/2"	17#	6200'	235 Sxs

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

Shari L. Janata

TITLE

Materials Coordinator

DATE

12-22-88

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

/s/Gene Nodine

TITLE

District Manager

DATE

1/11/89

CONDITIONS OF APPROVAL, IF ANY:

CONDITIONS OF APPROVAL ATTACHED

*See Instructions On Reverse Side

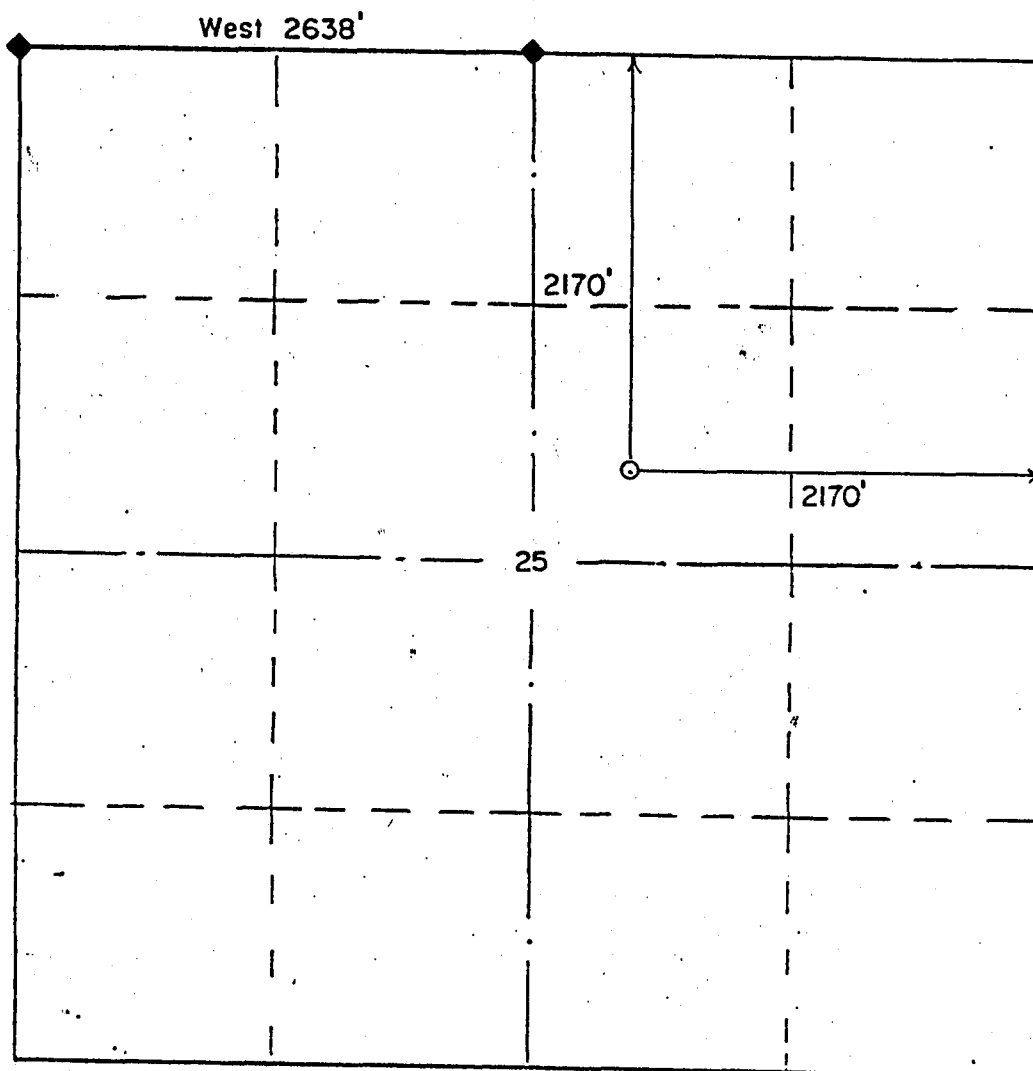
Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

FLARING OR VENTING OF
GAS IS SUBJECT TO NTL 4-A

Dated 1/11/89

STATE OF UTAH - DUCM

WELL LOCATION AND ACREAGE DEDICATION PLAT



1"=1000'

◆ brass cap

WELL LOCATION DESCRIPTION:

AXEM RESOURCES Black Steer Federal 7-25

2170'FNL & 2170'FEL

Section 25, T.38 S., R.24 E., SLM

San Juan County, Utah

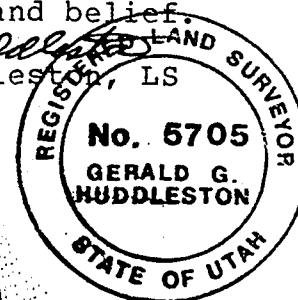
5181' ground elevation

Alternate: 2290'FN, 1990'FE, 5182' ground elevation

The above plat is true and correct to my knowledge and belief.

7 December 1988

Gerald G. Huddleston, LS



Axem Resources Incorporated
Well No. Black Steer Federal 7-25
Sec. 25, T. 38 S., R. 24 E., SLB&M
San Juan County, Utah
Lease U-64081

CONDITIONS OF APPROVAL

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Be advised that Axem Resources Incorporated is considered to be the operator of the above well, and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by Bond No. 610 147346 4 (Principal - Axem Resources Incorporated).

This office will hold the aforementioned operator and bond liable until the provisions of 43 CFR 3106.7-2 continuing responsibility are met.

A. DRILLING PROGRAM

All lease operations will be conducted in full compliance with applicable regulations (43 CFR 3100), Onshore Oil and Gas Order 1, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors. A copy of these conditions and the approved plan will be made available to the field representative to insure compliance.

1. If unconsolidated rock is encountered, conductor shall be set ten (10) feet into underlying bedrock with cement circulated to surface.
2. Surface casing will be set 50 feet into the Chinle Formation regardless of the depth the Chinle is encountered.

B. ADDITIONAL REQUIREMENTS ACCORDING TO ONSHORE OIL AND GAS ORDER NO 2

- 3000 psi BOP & BOPE

2 kill line valves, one of which shall be a check line valve (2 inch minimum).

2 choke line valves (3 inch minimum).

Upper kelly cock valve with handle available.

Safety valve and subs to fit all drill string connections in use.

All BOPE connections subjected to well pressure shall be flanged welded, or clamped.

- If repair or replacement of the BOPE is required after testing, this work shall be performed prior to drilling out the casing shoe.
- When the BOPE cannot function to secure the hole, the hole shall be secured using cement, retrievable packer or bridge plug packer, bridge plug or other acceptable approved methods to assure safe well conditions.

- Choke Manifold Equipment

All choke lines shall be straight lines unless turns use tee blocks or are targeted with running tees and shall be anchored to prevent whip and reduce vibration.

All valves (except chokes) in the kill line, choke manifold and choke line shall be a type that does not restrict the flow (full opening) and that allows a straight through flow.

Pressure gauges in the well control system shall be a type designed for drilling fluid service.

- 3000 psi system - Accumulator Equipment

Accumulator shall have sufficient capacity to open the hydraulically-controlled choke line valve (if so equipped), close all rams plus the annual preventer and retain a minimum of 200 psi above precharge on the closing manifold without the use of the closing unit pumps. This is a minimum requirement. The fluid reservoir capacity shall be double the accumulator capacity and fluid level maintained at manufacturer's recommendations. The 3M system shall have 2 independent power sources to close the preventers. Nitrogen bottles (3 minimum) may be one of the independent power sources and, if so, shall maintain a charge equal to manufacturer's specifications.

Power for the closing unit pumps shall be available to the unit at all times so that the pumps shall automatically start when the closing unit manifold pressure has decreased to a pre-set level.

Each BOP closing unit shall be equipped with sufficient number and sizes of pumps so that, with the accumulator system isolated from service, the pumps shall be capable of opening the hydraulically-operator gate valve (if so equipped), plus closing the annular preventer on the smallest size drill pipe to be used within 2 minutes, and obtain a minimum of 200 psi above specified accumulator precharge pressure.

A manual locking device (i.e. hand wheels) or automatic locking devices shall be installed on all systems of 2000 psi or greater. A valve shall be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for accumulator system is inoperative.

Remote controls shall be readily accessible to the driller. Remote controls for all 3000 pound systems shall be capable of closing all preventers.

- BOP Testing

Pressure tests on ram type preventers shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer. If a test plug is utilized, no bleed off of pressure is acceptable. For a test not utilizing a test plug, if a decline in pressure of more than 10 percent in 30 minutes occurs, the test shall be considered to have failed. Valve on casing head below test plug shall be open during test of BOP stack.

Annular BOP pressure tests shall be maintained at least 10 minutes or until provisions of test are met, whichever is longer.

As a minimum, the above tests shall be performed:

- **When initially installed;
- **Whenever any seal subject to test pressure is broken;
- **Following related repairs; and
- **At 30 day intervals.

Valves shall be tested from working pressure side during BOPE tests with all down stream valves open.

When testing the kill line valve(s) the check valve shall be held open or the ball removed.

Annular preventers shall be functionally operated at least weekly.

Pipe and blind rams shall be activated each trip, however this function need not be performed more than once a day.

A BOPE pit level drill shall be conducted weekly for each drilling crew.

Pressure tests shall apply to all related well control equipment.

All of the above described tests and/or drills shall be recorded in the drilling log.

- Casing and Cementing

All waiting on cement times shall be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

All casing, except the conductor casing, shall be new or reconditioned and tested used casing that meets or exceeds API standards for new casing.

All indications of usable water shall be reported to the authorized officer prior to running the next string of casing or before plugging orders are requested whichever occurs first.

Surface casing shall have centralizers on every fourth joint of casing starting with the shoe joint and up to the bottom of the cellar.

Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a suitable preflush fluid, inner string cement method., etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

All casing strings below the conductor shall be pressure tested to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

B. SURFACE USE PLAN

If at any time the facilities located on public lands authorized by the terms of the lease are no longer included in the lease (due to a contraction in the unit or other lease or unit boundry change) the BLM will process a change in authorization to the appropriate statute. The authorization will be subject to appropriate rental, or other financial obligation determined by the authorized officer.

NOTIFICATIONS

Notify the San Juan Resource Area, at (801) 587-2144 for the following:

2 days prior to commencement of dirt work, construction or reclamation;

1 day prior to spudding;

1 day prior to running and cementing surface casing;

Notify the Moab District Office, Branch of Fluid Minerals at (801) 259-6111 for the following:

No well abandonment operations will be commenced without the prior approval of the District Manager. In the case of newly drilled dry holes, and in emergency situations, verbal approval can be obtained by calling the following individuals, in the order listed:

Dale Manchester, Petroleum Engineer Office Phone: (801) 259-6111

Home Phone: (801) 259-6239

Eric Jones, Petroleum Engineer Office Phone: (801) 259-6111

Home Phone: (801) 259-2214

If unable to reach the above individuals including weekends, holidays, or after hours please call the following:

Lynn Jackson, Chief, Branch of Fluid Minerals

Office Phone: (801) 259-6111

Home Phone: (801) 259-7990

Paul Brown, I&E Coordinator

Office Phone: (801) 259-6111

Home Phone: (801) 259-7018

24 hours advance notice is required for all abandonments.

CONFIDENTIAL

DIVISION OF OIL, GAS AND MINING

SPODDING INFORMATION

API NO. 43-037-31461

NAME OF COMPANY: AXEM RESOURCES INC.WELL NAME: BLACK STEER FEDERAL 7-25SECTION SWNE 25 TOWNSHIP 38S RANGE 24E COUNTY SAN JUANDRILLING CONTRACTOR EXETER DRILLINGRIG # 68SPUDDED: DATE 1/19/89TIME 3:00 p.m.How ROTARYDRILLING WILL COMMENCE REPORTED BY SHERRIETELEPHONE 303-740-9000 ext 334DATE 1/24/89 SIGNED TAS TAKEN BY: AWS



Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Robert L. Morgan
State Engineer

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

1636 West North Temple, Suite 220
Salt Lake City, Utah 84116-3156
801-538-7240

RECEIVED
JAN 24 1989

DIVISION OF
OIL, GAS & MINING

MEMORANDUM

To: John Baza, Oil, Gas, & Mining

From: Bill Schlotthauer, Water Rights *us*

Re: Axem Resources Wildcat Well 43-037-31461
(RDCC #UT890105-010)

*Water Right 89-0901
Approved 1-19-89 - Water Rights
San Juan
38S 24E Sec. 25
Black Steer Fed. 7-25*

Date: January 19, 1989 - *Spud Date*

Our Area Engineer in Price, Mark Page, was contacted by telephone by Shari Janata of Axem concerning water rights for this well; he sent her an Application to Appropriate Water (Temporary) to be filled out and returned. This occurred about three and a half weeks ago; as of 13 January, he hasn't heard from her or received the completed application. As of this date, no application has been received here in the Salt Lake Office. Unless they are purchasing water from some other entity, they have no valid water right with which to obtain water.

cc: John Harja, Office of Planning and Budget

WES/ss

CONFIDENTIAL

ENTITY ACTION FORM - DOGM FORM 6

RECEIVED
JAN 26 1989

OPERATOR AXEM RESOURCES INCORPORATED
ADDRESS 7800 E. Union Ave., Suite 1100
Denver, Colorado 80237

OPERATOR CODE No145
PHONE NO. 303, 740-9000

CONFIDENTIAL

OPERATORS MUST COMPLETE FORM UPON SPUDDING NEW WELL OR WHEN CHANGE IN OPERATIONS OR INTERESTS NECESSITATES CHANGE IN EXISTING ENTITY NUMBER ASSIGNMENT.

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	OIL, GAS & MINING	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
A	99999	10966	43-037-31461	Black Steer Fed. #7-25	SWNE	25	38S	24E	San Juan	1-19-89	
COMMENTS: Federal-Lease Proposed Zone - Akah Field-wildcat (Only well in sec. 25. Assign new entity 10966 on 1-30-89. for) Not in a Unit											
COMMENTS:											
COMMENTS:											
COMMENTS:											
COMMENTS:											
COMMENTS:											

ACTION CODES: A - ESTABLISH NEW ENTITY FOR NEW WELL
B - ADD NEW WELL TO EXISTING ENTITY
C - RE-ASSIGN WELL FROM ONE EXISTING ENTITY TO ANOTHER EXISTING ENTITY
D - RE-ASSIGN WELL FROM ONE EXISTING ENTITY TO A NEW ENTITY
E - OTHER (EXPLAIN IN COMMENTS SECTION)
(SEE INSTRUCTIONS)

Shari L. Janata
SIGNATURE Shari L. Janata
Material Coordinator 1/23/89
TITLE DATE

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>		5. LEASE DESIGNATION AND SERIAL NO. U-64081
2. NAME OF OPERATOR Axem Resources Incorporated		6. IF INDIAN, ALLOTTEE OR TRIBE NAME
3. ADDRESS OF OPERATOR 7800 E. Union Ave., Suite 1100, Denver, CO 80231		7. UNIT AGREEMENT NAME
4. LOCATION OF WELL (Report location clearly and in accordance with State requirements. See also space 17 below.) At surface 2170' FNL & 2170' FEL SW NE		8. FARM OR LEASE NAME Black Steer Fed.
14. PERMIT NO. 43-037-31461		9. WELL NO. 7-25
15. ELEVATIONS (Show whether on OIL, GAS & MINING) 5181' GR		10. FIELD AND POOL, OR WILDCAT Wildcat
		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T38S-R24E
		12. COUNTY OR PARISH San Juan
		13. STATE Utah

RECEIVED
JAN 26 1989

DIVISION OF
OIL, GAS & MINING

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF

PULL OR ALTER CASING

WATER SHUT-OFF

REPAIRING WELL

FRACTURE TREAT

MULTIPLE COMPLETE

FRACTURE TREATMENT

ALTERING CASING

SHOOT OR ACIDIZE

ABANDON*

SHOOTING OR ACIDIZING

ABANDONMENT*

REPAIR WELL

CHANGE PLANE

(Other) Spudding

(Other)

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well was spudded January 19, 1989 at 3:00 P.M. by Exeter Drilling Rig #68. Mike Wade with the Bureau of Land Management and Arlene with the State of Utah Oil, Gas and Mining's office were notified.

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18. I hereby certify that the foregoing is true and correct

SIGNED

Shari L. Janata

TITLE

Material Coordinator

DATE

1-23-89

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side



STATE OF UTAH
NATURAL RESOURCES
Water Rights

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Robert L. Morgan, State Engineer

Southeastern Area • 453 S. Carbon Avenue • P.O. Box 718 • Price, UT 84501-0718 • 801-637-1303

CONFIDENTIAL

January 27, 1989

RECEIVED
JAN 30 1989

Division of Oil, Gas & Mining
Attn: Lisha Romero
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

DIVISION OF
OIL, GAS & MINING

Re: Temporary Change Application t89-09-01
Black Steer Well 7-25
AXEM Resources Incorporated

Dear Lisha:

The above referenced Temporary Change Application has been approved, and a copy is enclosed for your records. If you have any questions, please feel free to contact me.

Sincerely,

Mark P. Page
Area Engineer

Enclosures
MPP/mjk

APPLICATION FOR TEMPORARY CHANGE OF WATER

RECEIVED
JAN 30 1989

RECEIVED

Rec. by _____

Fee Paid \$ _____

Receipt # _____

Microfilmed _____

Roll # _____

STATE OF UTAH JAN 18 1989

DIVISION OF
OIL, GAS & MINING

WATER RIGHTS

For the purpose of obtaining permission to make a temporary change of water in the State of Utah, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of Section 73-3-3 Utah Code Annotated 1953, as amended.

*WATER RIGHT NO. 09 - Area _____ *APPLICATION NO. t 89 - 09 - 01

Changes are proposed in (check those applicable)

_____ point of diversion. X place of use. X nature of use. _____ period of use.

1. OWNER INFORMATION

Name: Ivan R. Watkins *Interest: _____%

Address: Box 938

City: Blanding State: Utah Zip Code: 84511

CONFIDENTIAL

2. *PRIORITY OF CHANGE: _____ *FILING DATE: _____

*Is this change amendatory? (Yes/No): No

3. RIGHT EVIDENCED BY: 09-637 (A45847)

Prior Approved Temporary Change Applications for this right: _____

***** HERETOFORE *****

4. QUANTITY OF WATER: 0.20 cfs and/or _____ ac-ft.

5. SOURCE: Underground Water Well

6. COUNTY: San Juan

7. POINT(S) OF DIVERSION: S. 2722 ft. & E. 10 ft. from NW Cor. Sec. 1, T37S, R22E, SLB&M.

Description of Diverting Works: 6-5/8" well, 185 feet deep

8. POINT(S) OF REDIVERSION

The water has been rediverted from _____ at a point: _____

Description of Diverting Works: _____

9. POINT(S) OF RETURN

The amount of water consumed is 0.20 cfs or _____ ac-ft.

The amount of water returned is _____ cfs or _____ ac-ft.

The water has been returned to the natural stream/source at a point(s): _____

*These items are to be completed by the Division of Water Rights.

Temporary Change

10. NATURE AND PERIOD OF USE

Irrigation: From Apr. 1 to Oct. 31
Stockwatering: From Jan. 1 to Dec. 31
Domestic: From _____ to _____
Municipal: From _____ to _____
Mining: From _____ to _____
Power: From _____ to _____
Other: From _____ to _____

11. PURPOSE AND EXTENT OF USE

Irrigation: 23.5 acres. Sole supply of 15.0 acres.
Stockwatering (number and kind): 65 Cattle
Domestic: _____ Families and/or _____ Persons.
Municipal (name): _____
Mining: _____ Mining District in the _____ Mine.
Ores mined: _____
Power: Plant name: _____ Type: _____ Capacity: _____
Other (describe): _____

12. PLACE OF USE

Legal description of place of use by 40 acre tract(s): SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 1, T37S, R22E, SLB&M

13. STORAGE

Reservoir Name: _____ Storage Period: from _____ to _____
Capacity: _____ ac-ft. Inundated Area: _____ acres.
Height of dam: _____ feet.
Legal description of inundated area by 40 tract(s): _____

***** THE FOLLOWING CHANGES ARE PROPOSED *****

14. QUANTITY OF WATER: _____ cfs and/or 5.0 ac-ft.

15. SOURCE: Underground Water Well

Balance of the water will be abandoned: _____, or will be used as heretofore: X

16. COUNTY: San Juan

17. POINT(S) OF DIVERSION: S. 2722 ft. & E. 10 ft. from NW Cor. Sec. 1, T37S, R22E, SLB&M

Description of Diverting Works: Portable pump & water trucks to the place of use.

*COMMON DESCRIPTION: _____

18. POINT(S) OF REDIVERSION

The water will be rediverted from _____ at a point: _____

Description of Diverting Works: _____

19. POINT(S) OF RETURN

The amount of water to be consumed is _____ cfs or 5.0 ac-ft.

The amount of water to be returned is _____ cfs or _____ ac-ft.

The water will be returned to the natural stream/source at a point(s): _____

20. NATURE AND PERIOD OF USE

Irrigation: From ___/___/___ to ___/___/___
Stockwatering: From ___/___/___ to ___/___/___
Domestic: From ___/___/___ to ___/___/___
Municipal: From ___/___/___ to ___/___/___
Mining: From ___/___/___ to ___/___/___
Power: From ___/___/___ to ___/___/___
Other: From 1 / 18/89 to 12/31 /89

21. PURPOSE AND EXTENT OF USE

Irrigation: _____ acres. Sole supply of _____ acres.
Stockwatering (number and kind): _____
Domestic: _____ Families and/or _____ Persons.
Municipal (name): _____
Mining: _____ Mining District at the _____ Mine.
Ores mined: _____
Power: Plant name: _____ Type: _____ Capacity: _____
Other (describe): Oil Well Drilling

22. PLACE OF USE

Legal description of place of use by 40 acre tract(s): _____
Black Steer Well 7-25: S. 2170 ft. & W. 2170 ft. from NE Cor. Sec. 25, T38S, R24E, SLB&M
(SW $\frac{1}{4}$ NE $\frac{1}{4}$)
43-037-31461-D-1.

23. STORAGE

Reservoir Name: Unnamed Reservoir Storage Period: from Jan. 1 to Dec. 31
Capacity: 3.0 ac-ft. Inundated Area: 0.33 acres.
Height of dam: 8 feet.
Legal description of inundated area by 40 tract(s): NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 1, T37S, R22E, SLB&M.

24. EXPLANATORY

The following is set forth to define more clearly the full purpose of this application. Include any supplemental water rights used for the same purpose. (Use additional pages of same size if necessary): _____
To supply drilling water for oil well exploration. The water is hauled by truck
from existing reservoir and underground water well.

The undersigned hereby acknowledges that even though he/she/they may have been assisted in the preparation of the above-numbered application through the courtesy of the employees of the Division of Water Rights, all responsibility for the accuracy of the information contained herein, at the time of filing, rests with the applicant(s).

Juan R. Watkins
Signature of Applicant(s)

STATE ENGINEER'S ENDORSEMENT

TEMPORARY CHANGE APPLICATION NUMBER: t89-09-01

1. January 18, 1989 Change Application received by MP.
2. January 19, 1989 Application designated for APPROVAL by MP.
3. Comments:

Conditions:

This application is hereby APPROVED, dated January 19, 1989, subject to prior rights and this application will expire on January 17, 1989.



Mark Page, Area Engineer
for
Robert L. Morgan, State Engineer



Norman H. Bangerter

Governor

Dee C. Hansen

Executive Director

William H. Geer

Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Southeastern Region

455 West Railroad Avenue

Price, Utah 84501-2829

801-637-3310

well file

January 31, 1989

RECEIVED
JAN 30 1989

DIVISION OF
OIL, GAS & MINING

Mr. John Baza
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Dear John:

In regards to Axem Resources Incorporated's proposed Black Steer Federal #7-25 (U-52656) wildcat well, the Division has no concerns relative to wildlife. The pad site (SWNE Sec. 25, T 28 S, R 24 E, San Juan County, UT) lies in an area ranked as having limited value to wildlife.

Thank you for an opportunity to review and provide comment.

Larry B. Dalton
Wildlife Program Manager
Resource Analysis/Habitat Protection

LBD/dd

cc: Darrell Nish, DWR
Linda Seibert, BLM

3-FEB-1989

AXEM RESOURCES

PAGE 1

WELL HISTORY

PARTICIPATING

State: UTAH

43-037-31461

Operator: AXEM RESOURCES INCORPORATED Well Name: BLACK STEER FEDERAL 7-25

Legal Desc: T 38S R 24E SEC 25 SAN JUAN COUNTY, UTAH

Prospect: BLACK STEER

AXEM Geologist: PETERSON

Property Number: 10901

Landman: CARSON

PTD: 6200(FT) Formation: ISMAY

Casing: 13 3/8" @ 55'.

Approximate WI: 0.25000 AC HCEC .33 BC SPUD No: 89-01 SPUD Date: 01/19/89

0.25000 AC HCEC .33 BC Gross AFE Cost Dry Hole: \$ 266000

0.00000 Gross AFE Cost Completed: \$ 497800

SUMMARY: DRILLING AHEAD AT 4858'.

****TIGHT HOLE****

----- 01/13/89 -----

01/13/89: Received State and Federal permits, begin building location

1/14/89. Plan to spud January 18th or 19th.

----- 01/20/89 -----

01/20/89: Last casing and depth: 13 3/8" 55'.

Days from spud: 1

Activity at report time: Drilling

Present depth: 375'.

Formation: Dakota

Dev survey: 1 deg @ 248'.

Mud weight 8.34, viscosity 26.

Spud 1500 hours 1/19/89. Cement with Dowell from

1700-1800 hours 60 sacks class B 1/4 celo 3% CACL, 15.6#/gal.

Circulated 10 sacks to surface. Drill 10' cement. Drilling ahead.

DC \$12,240 CC \$12,240.

CONFIDENTIAL

RECEIVED
FEB 06 1989

DIVISION OF
OIL, GAS & MINING

WELL HISTORY FOR BLACK STEER FEDERAL 7-25

----- 01/23/89 -----

01/21/89: Days from spud: 2 Activity at report time: Drilling
Present depth: 1826'. Footage last 24 hrs: 1451'. Formation: Navahoe
Deviation survey: 1 deg @ 720', 1 deg @ 1232', 3/4 deg @ 1732'.
Mud weight 8.4, Viscosity 27, Drilling with water.
DC \$ 21,068 CC \$ 33,308

01/22/89: Days from spud: 3 Activity at report time: Nipple up BOP.
Present depth: 2008'. Footage last 24 hrs: 182'. Formation: Chinle
Deviation survey: 3/4 deg A 1968'.
TD 11" surface hole in Chinle 2008' 11:30 AM 1/21/89. Ran 47 joints
2004.50 feet B 5/8" 24# K-55 STC to 2007'.
Dowell Cemented with 400 sxs 65/35 poz 6% gel 6 1/4# gilsonite
1/4 celo. 2% CACL and tailed with 250 sxs Class B 1/4# celo 2% CACL.
Circ. cement with water to surface. Did not see cement. Ran cement
outside. Top job with 25 sxs Class B 2 % CACL. Cement did not
fall back. BLM witnessed. Daily cost includes road location and
permitting. DC \$48,944 CC \$82,252.

01/23/89: Days from spud: 4 Activity at report time: Drilling.
Present depth: 2608'. Footage last 24 hrs: 600'.
Formation: Shinarump
Deviation survey: 1 deg @ 2467'.
Drilling with water. All BOP tests were good.
DC \$10,343 CC \$92,595

----- 01/24/89 -----

*****TIGHT HOLE*****

01/24/89: DAYS FROM SPUD: 5. ACTIVITY AT REPORT TIME: Drilling.
PRESENT DEPTH: 3594'. FOOTAGE LAST 24 HRS: 986'. FORMATION: Cutler
DEVIATION SURVEY: 3/4 DEG @ 2962'. 3/4 DEG @ 3478'. Drilling with
fresh water. DC \$13,519 CC \$106,114.

----- 01/25/89 -----

01/25/89: Days from spud: 6 Activity at report time: drilling
Present depth: 4288 Footage last 24: 694' Formation: Cutler
Mud weight 8.7 Viscosity: 30 CL: 2800
12' Drill break 4238 and created tight hole.
DC \$ 10,155 CC \$ 160,269

----- 01/26/89 -----

01/26/89: Days from spud: 7, Activity at report time: Drilling.
Present Depth: 4858', Footage last 24 hrs: 570',
Formation: Honaches Trail, Mud weight: 9.3, Viscosity: 33,
PV: 5, YP: 5, Gels: 4/10, PH: 9, WL: 22, FC: 2/32, CL: 300
Work pipe 1 hour. Mud logger and goe on location at 4400. Began light
mud up at 4639. Honaker trail top @ 4790. 12 to 15 feet high.
DC \$11,394 CC \$127,663

----- 01/27/89 -----

01/27/89: Days from spud: 8, Present Operation: Drilling.
Present Depth: 5243'. Footage last 24 hrs: 385'. Formation:
Honaches Trail. Mud weight: 9.3, Viscosity: 33, Water Loss: 22,

CL: 300. DC \$6436 CC 134,099.

WELL HISTORY FOR BLACK STEER FEDERAL 7-25

----- 01/28/89 -----

*****TIGHT HOLE*****

01/28/89: Days from spud: 9. Activity at report time: drilling.
Present Depth: 5516'. Footage last 24 hrs: 273'. Formation: Honaches
Trail. Mud weight 9.3, Viscosity 34, water loss 18. CL 300. Bit
trip went good. Hole in pretty good shape. DC \$ 4915 CC \$139,014

01/29/89: Days from spud: 10. Activity: Drilling. Present depth
5812'. Footage 1st 24 hrs: 296. Formation: Upper Ismay. Mud weight
9.6, Viscosity 34, Water loss 19, CL: 300. Upper Ismay 5814'. DC
\$5253 CC \$144,267.

01/30/89: Days from spud: 11. Activity at report time: Trip in hole
with test tool. Present depth: 5966'. Footage last 24 hrs: 154'.
Formation: Hovenweep shale. Mud weight: 10.1, Viscosity: 37, PV:
8, YP: 4, Gels: 4/8, PH: 10.5, WL: 8, FC: 2/32, CL: 300.
Hovenweep shale 5940 10' shale breaks. 1st - 5914-5918' 4 1/2 to 1 1/2
min/ft. gas 88 increase to 250. 2nd - 5928'-5931' 3 to 2 min/ft. 88
increase to 250 units. 3rd - 5950'-5954' 3 1/2 to 2 1/2 min/ft. High
gas 650 units, oil on pits. 9.6# weight cut to 9.4#/gal. Circulate mud
up to 10# and gas down 140 units @ 9.8#. Running DST 5898'-5966'. 68'.
DC \$6154 CC \$150,421.

DRILLSTEM TEST SUMMARY:

TEST #: 1

TEST INTERVAL: 5898'-5966'.

TIMES: 15-45-60-180. INITIAL FLOW: Weak blow 1/4", rapidly increase
to 1/2# 5 minutes, 3/4# 10 minutes, leveled off @ 15 minutes.

FINAL FLOW: Open moderate blow 1/4# 20 minutes still had 1/4#, 30
minutes still had 1/4#. Final results expected at 5:00 pm today.

----- 01/31/89 -----

*****TIGHT HOLE*****

01/31/89: Days from spud: 12. Activity at report time: Drilling
ahead. Present Depth: 6087'. Footage last 24 hr: 121'. Formation:
Desert Creek. Mud weight 10.1, Viscosity 41. CL 300.
Formation Tops: Lower Ismay: 5949'
Gothic Shale: 6016'
Desert Creek: 6044'

DST #1. Test Interval 5898'-5966'. (68')
15 minute initial flow. Opened tool with weak blow 1/4" bubble hose.
Flow rapidly increased to 1/2 psi in 5 minutes, 3/4 psi in 10 minutes,
leveled off @ 3/4 psi to the end of the initial flow.
45 minute initial shut in and 60 minute final flow. Final flow open
tool with moderate blow. 1/4 psi on 1/4" bubble hose. 20 minutes into
flow - no change. 40 minutes into flow - no change. 60 minutes at the
end of flow - no change. Final shut in - 180 minutes. No gas to
surface. Recovery - 110' of slightly gas cut mud in pipe. Sample
recovery - 25lbs recovered 1000cc's of slightly gas cut mud with slight
oil stain. Bottom hole temp 128 degrees.

Chart #1: 24 hour clock @ 5875 depth.

Initial hydrostatic pressure: 3098
Final hydrostatic pressure: 3079
Initial flow: 54# to 56#
Final flow: 56# to 58#
Initial shut in: 65#
Final shut in: 152#

Chart #2: 12 hour clock @ 5964 depth.
Initial hydrostatic: 3129
Final hydrostatic: 3116
Initial flow: 108 (stayed at same)
Final flow: 108 (stayed at same)
Initial shut in: 113#
Final shut in: 168#
RW's - 1.0 @ 65 degrees.

DC \$10,604 CC \$161,025

----- 02/01/89 -----

02/01/89: Days from spud: 13. Activity at report time: Run logs.
Present Depth: 6170'. Footage last 24 hrs: 83. Mud weight 10.0,
Viscosity 40, CL 500.
Logging. TD well in Paradox Salt @ 12:30 pm. 1/31/89.
Strapped pipe 6199.30, wireline 1673. First two logs being
telecopied at 8:00 am. Bridge stopped sonic log.
DC \$5490 CC \$166,516.

3-FEB-1989

A X E M R E S O U R C E S

PAGE 4

WELL HISTORY FOR BLACK STEER FEDERAL 7-25

----- 02/02/89 -----

02/02/89: Days from spud: 14. Present depth: 5852'.
Side wall cores cut and recovered 7 sidewall cores.
DC \$ 21,450 CC \$ 187,965.

----- 02/03/89 -----

02/02/89: Days from spud: 15.
#1 5652-5862 200' 80sxs
#2 2624-2724 100' 60sxs
#3 1967-2067 100' 50sxs
#4 Surface - 60' 20sxs.

Released rig @ 14:30 2/2/89. BLM representative witnessed first two
plugs. DC \$9866 CC \$197,831 before cleanup costs.

END of WELL HISTORY REPORT



State of Utah
OFFICE OF PLANNING AND BUDGET

Norman H. Bangerter
Governor

Dale C. Hatch, C.P.A., J.D.
Director

Michael E. Christensen, Ph.D.
Deputy Director

116 State Capitol Building
Salt Lake City, Utah 84114
(801) 538-1027

February 9, 1989

well file

RECEIVED
FEB 13 1989
DIVISION OF
OIL, GAS & MINING

*Axem Resources
Cont.*

Mr. John Baza
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203

SUBJECT: Application for Permit to Drill a Wildcat Well - the Black Steer
Federal #7-25 on federal lease number U-52656; San Juan County
State Application Identifier #UT890105-010

Dear Mr. Baza:

The Resource Development Coordinating Committee of the State of Utah has reviewed this proposed action and the Division of State History comments:

The Utah State Historic Preservation Office reviewed [the] cultural resource files for the [stated] project area. No prehistoric or historic sites have been recorded within the project area because no cultural resource surveys have been conducted. The project area is surrounded by areas which have been surveyed for cultural resources and where many important prehistoric Anasazi sites have been recorded. This is one of the most densely occupied prehistoric areas in Utah. The usual site type is a complex village with associated structures, midden areas, and human burials. There is a high potential that this project will impact cultural resources which are eligible for inclusion on the National Register of Historic Places.

This information is provided on request to assist the Division of Oil, Gas and Mining. It does not constitute Section 106 consultation as specified in 36 CFR 800 because no federal agency sent a request for consultation on eligibility or effect determination. If you have questions or need additional [historic] assistance, please contact [Diana Christensen] at (801) 533-7039.

We note that the Division of Water Rights commented directly to you.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse, at the above address, or call Carolyn Wright (801) 538-1535 or John Harja (801) 538-1559.

Sincerely,

Michael E. Christensen

Michael E. Christensen
State Planning Coordinator

MEC/jw

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on
reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input checked="" type="checkbox"/> Plug & Abandon		5. LEASE DESIGNATION AND SERIAL NO. U-64081
2. NAME OF OPERATOR Axem Resources Incorporated		6. IF INDIAN, ALLOTTEE OR TRIBE NAME
3. ADDRESS OF OPERATOR 7800 E. Union Ave., Suite 1100, Denver, Colorado 80231		7. UNIT AGREEMENT NAME
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface 2170' FNL, 2170' FEL SWNE		8. FARM OR LEASE NAME Black Steer Fed.
14. PERMIT NO. 43-037-31461		9. WELL NO. 7-25
15. ELEVATIONS (Show whether DF, RT, GR, etc.) GR 5181'		10. FIELD AND POOL, OR WILDCAT Wildcat
		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 25, T38S-R24E
		12. COUNTY OR PARISH San Juan
		13. STATE Utah

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>
(Other) <input type="checkbox"/>	

SUBSEQUENT REPORT OF:

WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input checked="" type="checkbox"/>
(Other) <input type="checkbox"/>	

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

Well was drilled to 6170' and found unproductive. Well was subsequently plugged.
The plugs were set as follows:

#1	5652-5852'	200'	80	sxs
#2	2624-2724'	100'	60	sxs
#3	1967-2067'	100'	50	sxs
#4	Surface	60'	20	sxs

Released rig 2:30 PM on 2/2/89. BLM representative witnessed first two plugs.

18. I hereby certify that the foregoing is true and correct

SIGNED

Shari L. Janata

TITLE

Materials Coordinator

DATE

2/10/89

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

FILE IN TRIPLICATE
FORM OGC-8-X

CONFIDENTIAL

56 64 03

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

RECEIVED
FEB 16 1989

OF
MINING

REPORT OF WATER ENCOUNTERED DURING DRILLING

Well Name & Number Black Steer Fed. #7-25

Operator Axem Resources Incorporated Address 7800 E. Union Ave., Suite 1100

Contractor Exeter Drilling Co. Address 1670 Broadway, Suite 3400, Denver, Co

Location SW 1/4 NE 1/4 Sec. 25 T: 38S R. 24E County San Juan

Water Sands

<u>Depth</u>		<u>Volume</u>	<u>Quality</u>
From	To	Flow Rate or Head	Fresh or Salty
1.	<u>All fresh water zones were cemented behind casing. No water flows were</u>		
2.	<u>encountered at any time during our drilling. Mud analysis revealed no</u>		
3.	<u>salt H₂O flows in either the Cutler or Honaker Trail formations.</u>		
4.	<u></u>		
5.	<u></u>		

(Continue of reverse side if necessary)

Formation Tops

Remarks

- NOTE: (a) Report on this form as provided for in Rule C-20, General Rules and Regulations and Rules of Practice and Procedure.
- (b) If a water analysis has been made of the above reported zone, please forward a copy along with this form.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE*

(See other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other _____

b. TYPE OF COMPLETION:

NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. REVR. ☐ Other P&A

2. NAME OF OPERATOR

Axem Resources Incorporated

3. ADDRESS OF OPERATOR

7800 E. Union Ave., Suite 1100, Denver, CO 80231

4. LOCATION OF WELL (Report location clearly and in accordance with State requirements)

At surface 2170; FNL, 2170' FEL SWNE

At top prod. interval reported below Same

At total depth Same

14. PERMIT NO.

43-037-31461

OIL, GAS & MINING
FEB 16 1989

5. LEASE DESIGNATION AND SERIAL NO.

U-64081

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Black Steer Fed.

9. WELL NO.

7-25

10. FIELD AND POOL, OR WILDCAT

Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

Sec 25, T38S-R24E

12. COUNTY OR PARISH

San Juan

13. STATE

Utah

15. DATE SPUDDED

1-19-89

16. DATE T.D. REACHED

2-1-89

17. DATE COMPL. (Ready to prod.)

Plugged

18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*

GR 5181'

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD

6170'

21. PLUG, BACK T.D., MD & TVD

22. IF MULTIPLE COMPL., HOW MANY*

None

23. INTERVALS DRILLED BY

ROTARY TOOLS

CABLE TOOLS

10-6170'

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

None

25. WAS DIRECTIONAL SURVEY MADE

No

26. TYPE ELECTRIC AND OTHER LOGS RUN

BHC-Sonic, CDL/CNS Dual Laterolog

27. WAS WELL CORED

7 sidewall cores

CONFIDENTIAL

29. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"		55'	17-1/2"	60 sxs Class B, 1/4 cello	None
8-5/8"	24#	2004.5'	11"	400 sxs, 65/35 poz 6% gel	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
None							

30. TUBING RECORD

31. PERFORATION RECORD (Interval, size and number)

None

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
None	

33. PRODUCTION

DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)				WELL STATUS (Producing or shut-in)	
Plugged							
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
			→				
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	
		→					

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED

Shari S. Jantz

TITLE

material coordinator

DATE

2/10/89

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.

DST #1. Test Interval 5898'-5966'. (68')
 15 minute initial flow. Opened tool with weak blow 1/4" bubble hose. Flow rapidly increased to 1/2 psi in 5 minutes, 3/4 psi in 10 minutes, leveled off @ 3/4 psi to the end of the initial flow.
 45 minute initial shut in and 60 minute final flow. Final flow open tool with moderate blow. 1/4 psi on 1/4" bubble hose. 20 minutes into flow - no change. 40 minutes into flow - no change. 60 minutes at the end of flow - no change. Final shut in - 180 minutes. No gas to surface. Recovery - 110' of slightly gas cut mud in pipe. Sample recovery - 25lbs recovered 1000cc's of slightly gas cut mud with slight oil stain. Bottom hole temp 128 degrees.

Chart #1: 24 hour clock @ 5875 depth.
 Initial hydrostatic pressure: 3098
 Final hydrostatic pressure: 3079
 Initial flow: 54# to 56#
 Final flow: 56# to 58#
 Initial shut in: 65#
 Final shut in: 152#

Chart #2: 12 hour clock @ 5964 depth.
 Initial hydrostatic: 3129
 Final hydrostatic: 3116
 Initial flow: 108 (stayed at same)
 Final flow: 108 (stayed at same)
 Initial shut in: 113#
 Final shut in: 168#
 RW's - 1.0 @ 65 degrees.

OIL	DRN	JRB	DTS	SLS	GLH	RUE
MICROFILM						
FILE						

38.

GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH
Lower Ismay	5949'	5949'
Gothic Shale	6016'	6016'
Desert Creek	6044'	6044'

INC.

1151-C BRITTMORE ROAD

HOUSTON, TEXAS 77043

(713) 932-7183

TRANSMITTAL LETTER
RECORD OF SHIPMENT OF CONFIDENTIAL INFORMATION

TO: State of Utah

Division of Oil, Gas & Mining

355 W. North Temple

Salt Lake City, UT 84180

FROM: P. Delacoe
Manager, Special Core Analysis
(NAME & TITLE)

DATE: February 24, 1989

VIA: _____

QUANTITY	DESCRIPTION	CONTENTS
2 copies	Special Core Analysis	Axem Resources Inc.
		Black Steer Federal No. 7-25 Well
		Wildcat
		San Juan County, Utah
		SRS 1142/RMD 1415

INSTRUCTIONS: PLEASE ACKNOWLEDGE RECEIPT PROMPTLY BY SIGNING AND RETURNING THE YELLOW COPY.

RECEIVED BY: A Young DATE: 3-1-84

REMARKS: _____

Reservoirs Inc.

1151 - C BRITTMORE ROAD

HOUSTON, TEXAS 77043

(713) 932-7183

February 17, 1989

Mr. Jim Peterson
Axem Resources Inc.
7800 East Union Avenue
Suite 1100
Denver, Colorado 80237

Dear Mr. Peterson:

On February 3, 1989 seven rotary sidewall samples, individually preserved in aluminum laminate were received at Reservoirs, Inc., Houston facility from Axem Resources Inc. The rotary sidewall samples were obtained from the Axem Resources Inc., Black Steer Federal No. 7-25 Well, San Juan County, Utah. The samples were each trimmed to a right cylinder prior to performing the following special core analysis tests:

Specific permeability to gas
Boyle's law helium porosity
Grain density

Presented within this report are the test results, in both tabular and graphical formats and a section describing in detail the laboratory procedures used during the testing.

Examination of Table 1 indicates that permeabilities to gas ranged from 0.001 md to 0.027 md. Porosities ranged from 0.5% B.V. to 14.8% B.V. and grain densities ranged from 2.64 g/cc to 2.78 g/cc. Figures 1 and 2 present the permeability-porosity relationship and grain density-porosity relationship, respectively. Sample H 219 from 5942 ft. was found to be fractured on receipt and so the permeability to gas was indeterminable for this sample.

I would like to take this opportunity to thank you and Axem Resources Inc. for selecting Reservoirs, Inc. to perform these analyzes for you. It is a pleasure to be of service to you and we look forward to working together with you on future projects. Should you have any questions pertaining to the test results, the procedures used to generate the results or if I can be of any further assistance, please do not hesitate to contact me at (713) 932-7183

Sincerely

P. Delacoe

P. Delacoe
Manager, Special Core Analysis

PD:aa

LABORATORY PROCEDURES

Sample Preparation

The seven rotary sidewall samples were trimmed to right cylinders using a diamond rimmed saw blade and thoroughly cleaned using toluene to remove any hydrocarbons present and an azeotropic mixture of methanol and chloroform to remove any water or salts present. The rotary sidewall samples were dried for 48 hours in a humidity controlled oven (40% relative humidity and 140°F) before placing them in a desiccator to cool to room temperature.

Basic Rock Properties

The bulk volume of each rotary sidewall sample was determined by mercury immersion (Archimedes' principle) and confirmed by measuring the length and diameter of the rotary sidewall sample with calipers and calculating the bulk volume.

The porosity and grain density of each rotary sidewall sample was determined using the Boyle's Law method and helium as the gaseous phase. The rotary sidewall sample was placed in a chamber (matrix cup) of known volume. Another chamber of known volume containing helium at a preselected pressure was connected to the matrix cup. The helium expanded into the matrix cup, and an equilibrium pressure was recorded. Using Boyle's Law, the grain volume of the rotary sidewall sample being tested can be determined. The grain volume subtracted from the bulk volume of the rotary sidewall sample results in the pore volume of the rotary sidewall sample. Porosity is the pore volume expressed as a percent of the bulk volume.

The grain density is the weight of the core material per unit volume of the core material (grain volume). The weight of the core material is determined by weighing the clean and dry rotary sidewall sample on a pan-balance at ambient conditions. The grain volume is obtained from the Boyle's Law calculations.

The specific permeability to gas was determined by placing each rotary sidewall sample in a Hassler-type core holder and applying a confining pressure of 300 psig to the system. The confining pressure prevents bypassing of the gas around the rotary sidewall sample. Nitrogen gas was injected into the rotary sidewall sample at a constant pressure until a constant flow rate of gas through the rotary sidewall sample was attained (steady-state conditions). The specific permeability to gas was calculated using the modified Darcy Equation.

Table 1

BASIC ROCK PROPERTIES

Axem Resources Inc.
 Black Steer Federal 7-25 Well
 Wildcat
 San Juan County, Utah
 SRS 1142/RMD 1415

<u>Sample</u>	<u>Depth</u> <u>(ft)</u>	<u>Permeability</u> <u>To Gas (md)</u>	<u>Porosity</u> <u>(% B.V.)</u>	<u>Grain Density</u> <u>(g/cc)</u>
H 215	5918	0.027	14.8	2.78
H 216	5924	0.002	2.7	2.75
H 217	5930	0.001	0.9	2.71
H 218	5936	0.005	1.8	2.78
H 219	5942	*	2.7	2.66
H 220	5948	0.021	1.5	2.64
H 221	5954	0.001	0.5	2.70

* Permeability to gas indeterminable, rotary sidewall sample fractured.

Figure 1
PERMEABILITY vs POROSITY

Axem Resources Inc.
Black Steer Federal No.7-25 Well
Wildcat
San Juan County, Utah
SRS 1142 / RMD 1415

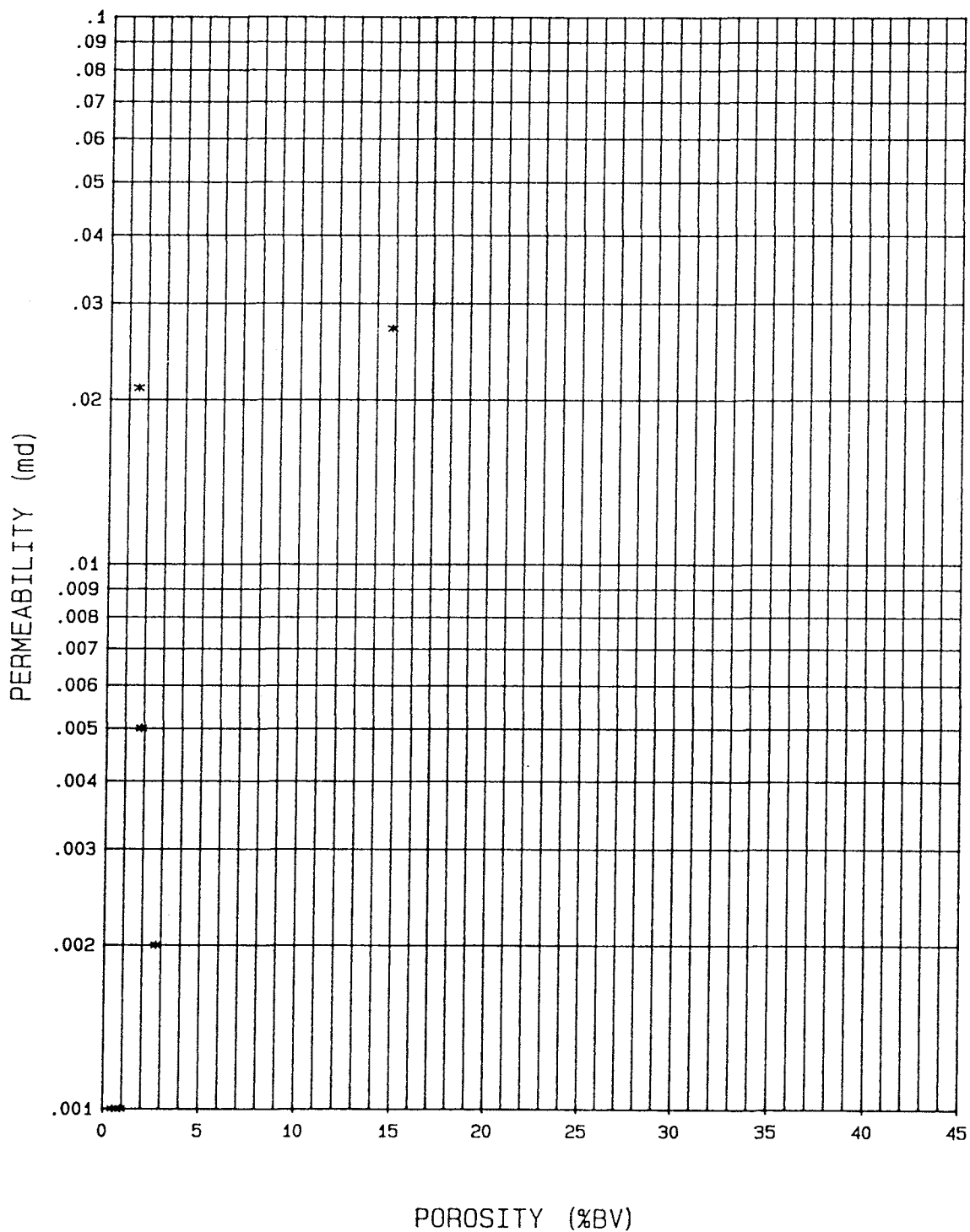
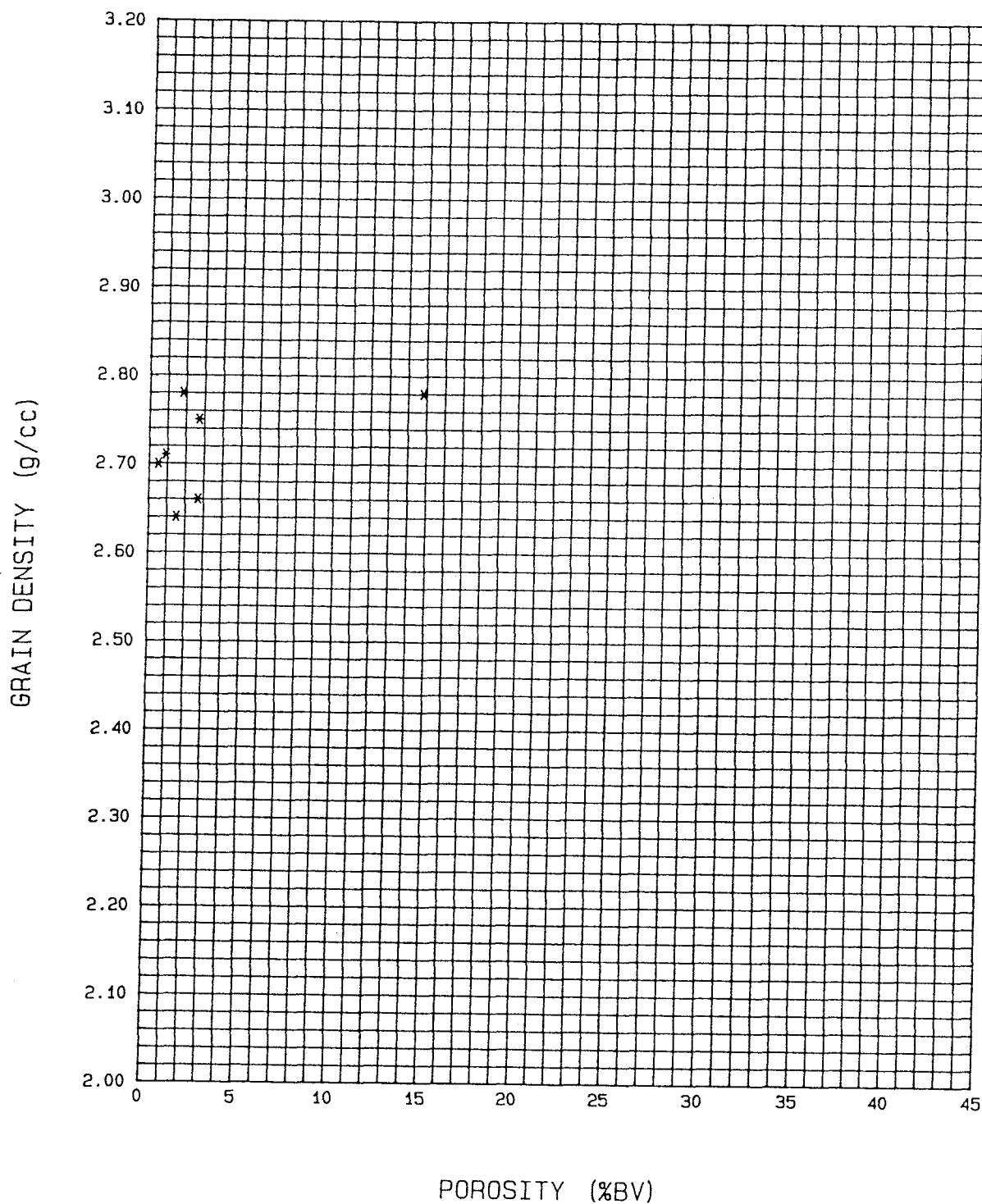


Figure 2
GRAIN DENSITY vs POROSITY

Axem Resources Inc.
Black Steer Federal No.7-25 Well
Wildcat
San Juan County, Utah
SRS 1142 / RMD 1415



RECEIVED
FEB 16 1989

DIVISION OF
OIL, GAS & MINING

**BLACK STEER FEDERAL #7-25
AXEM RESOURCES, INCORPORATED**

2170' FNL, 2170' FEL
SECTION 25, TOWNSHIP 38 SOUTH, RANGE 24 EAST
SAN JUAN CTY, UTAH

GEOLOGIST: MR. CHARLIE CALLAHAN
693 URBAN COURT
HR 608
GOLDEN, COLORADO 80401
PHONE: (303) 232-2404 (BUS)
(303) 356-2449 (RES)

HOLE INFORMATION

CONFIDENTIAL

NAME: Black Steer Federal #7-25
OPERATOR: AXEM RESOURCES, INCORPORATED

LOCATION: Section 25
Township 38 South, Range 24 East
San Juan County, Utah

Spud Date:	1/19/89
Total Depth Date:	1/31/89
Total Depth:	6170 (Driller's)
Total E-log Depth:	6173
Status:	Plug and Abandon

Ground Level Elevation:	5180
Floor Elevation:	5192

Drilling Rig:	Exeter #68
Hole Size:	55' of 17 1/2", 1953' of 11", 6162' of 7 7/8"
Surface Casing:	55' conductor, 1998' of 11" intermediate
Mud Program:	Fresh Water/High Ph
Electrical Logs:	Haliburton Logging Services Engineer..... Mr. Bauer

CDL CNS Gamma Ray
4150' to TD
B H C Sonic Ray with Gamma
2002' to TD
Dual Laterolog MSFL Log
2002' to TD, Gamma TD to 2900'

Sidewall Cores: 5918, 5924, 5930, 5936, 5942,
5948'

Drill Stem Tests: Baker, Testing Mr. David
Dolyniuk

DST #1 5998-6066 (Strip Log)
(E-log)

Rig Personalities

Company Representative: Mr. Ralph Sloane, Sloane
Consulting

On-site Partner Geologist: Mrs. Janine Sturdevant
Coastal

Geologist: Mr. Charles Callahan

Mudlogger: Mr. Daron Clay, Rocky Mtn. Geo
Engineering

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Mud History.....	Page 31
Strip Log.....	
Following Report	

Formation Tops

<u>Formation</u>	<u>Strip Log</u>	<u>E-Log</u>	<u>Subsea</u>
Intermediate Casing		1998	+3194
Shinarump		2773	+2419
Moenkopi		2795	+2397
Dochelly Cutler		2990	+2202
Organ Rock		3022	+2170
Honaker Trail	4814	4811	-379
<u>Upper Ismay</u>			
Regional Capping Facies	5801	5802	-610
Massive Anhydrite	5870	5872	-680
Algal Facies	5914	5914	-722
<i>Drill Stem #1</i>	5898-	5899	-707
	5966	5967	-775
<u>Hovenweep</u>	5939	5940	-748
Lower Ismay	5950	5952	-760
Gothic	6012	6012	-820
Upper Desert Creek	6044	6044	-852
<u>Lower Desert Creek</u>	6082	6083	-891
Chimney Rock	6112	6114	-922
Akah	6138	6137	-945
Salt	6167	6169	-977
Total Depth	6170	6173	-981

*Local colloquialism by drilling personal, describing lower part of Honker Trail, describing a zone which drillings relatively slower whether a shale bit (F-2 equivalent) or a harder bit (F-3 equivalent) is used.

SHOW REPORTS

Introductory Notes:

1. Figures in parentheses following "parts per million readings" for C1-4 indicate multiples of the "Before" reading, using the "Before" as the base line of (1).
2. Each different set of chromatograph (and hotwire) equipment has different levels of sensitivity as well as different thresholds of detection, i. e., how much gas is needed to trigger a reading. Therefore, these gas readings are most comparable to filament detectors used by Rocky Mountain Geo-Engineering.
3. The use of the "multiples" (in parentheses) may help comparing these readings to readings recorded by filament instruments (manufactured by different companies) within this basin.

I. LOWER PARADOX SHALE GAS KICK 5767 (Strip Log)

	<u>Before</u>	<u>During</u>	<u>After</u>	
Drilling Rate	5.5	4.5	5.5	minute/foot
Hotwire	10	100	100	units
C1	200 (1)	4450 (22.75)	4450 (=)	ppm
C2	45 (1)	1500 (33.3)	1500 (=)	ppm
C3	Trace (~1)*	875 (12)	875 (=)	ppm
C4	0 (~1)	300 (5)	300 (=)	ppm

*"~" = "approximately". Used to eliminate meaninglessly large numbers. The "During" reading reflects the "units" of the reading.

LITHOLOGY:

The bulk of the interval was:

Limestone-dark grey to grey brown, crpto to microsparmicritic, firm to occasionally very firm, bituminous streaks (i.e., bituminous limestone), white calcite clasts in the "shale" part, locally sandy and silty, no intercrystalline porosity, no stain, no cut.

COMMENTS:

On some of the nearby wells, particularly those to the northeast, the base of the "Paradox Shale" (a driller's term for the 200' above the Upper Ismae) is fractured with vertical fractures. This fracturing causes the Upper Ismae Gas to migrate uphole, sometimes as far uphole as the Honaker Trail Formation top.

-personal communication, Mr. Curly Teter, tool pusher

2. 1ST UPPER Ismay ZONE 5914-5918 (Strip Log)

	<u>Before</u>	<u>During</u>	<u>After</u>	
Drill Rate	5	2.5	5	min/foot
Hotwire	88	252	88	units
C1	4300 (1)	23460 (5.46)	4200 (.98)	ppm
C2	1395 (1)	5425 (3.89)	1295 (.93)	ppm
C3	820 (1)	3280 (4)	720 (.88)	ppm
C4	300 (1)	1480 (4.93)	200 (.67)	ppm

Lithology:

Limestone-light brown grey, microcrystalline to trace microsucrosic matrix, moderately firm to firm, moderately dolomitic, mostly micritic, trace thin algal beds, pelletal layers (30%)- possibly a pellet sand, scattered crinoid fragments, trace oolites, possible thin carbon rich streaks, no pisolites, no significant significant secondary matrix alteration, trace black to dark brown residual stain (.1%), trace fair porosity, no mineral fluorescence, no cut

Rating:

Poor

Analysis

The 1st porosity of the Upper Ismay was poorly developed, and, likely was typical of area wide norms.

3. 2nd Zone of the Upper Ismay 5928-5930 (Strip Log)
5930-5930 (E-log)

	<u>Before</u>	<u>During</u>	<u>After</u>	
Drilling Rate	5	2.5	5	min/ft
Hotwire	88 (1)	248 (2.81)	88 (1)	units
C1	4200 (1)	35475 (8.44)	4200 (1)	ppm
C2	1395 (1)	7440 (5.33)	1395 (1)	ppm
C3	820 (1)	4305 (5.25)	820 (1)	ppm
C4	300 (1)	2200 (7.33)	300 (1)	ppm

Lithology:

Dolomite- light brown to light brown grey, microcrystalline to microsucrosic, moderately firm to firm, slightly calcitic, strong recementation, discernible rhombs, firm moderately to strongly clay matrix, no evidence of vugs, trace fair intercrystalline porosity, no significant stain, trace green flourescence, no cut

Rating:

Poor. Insufficient porosity over too short an interval.

3. Hovenweep Oil Seep 5952-5954 (Strip Log: Real Time) Somewhere in the Hovenweep

(Oil seepage location plotted with respect to time of release)

	<u>Before</u>	<u>During*</u>	<u>After</u>	
Drilling Rate	5	2.5	5	min/ft
Hotwire	88	450	variable	units
C1	4200 (1)	39000 (9.28)	variable	ppm
C2	1395 (1)	11000 (7.88)	variable	ppm
C3	820 (1)	4800 (5.85)	variable	ppm
C4	300 (1)	3050 (10.17)	variable	ppm

*Maximum values of 650 units HW were recorded while suppressing the oil seepage via mud circulation and adding bar. See Hole History Section.

Lithology:

Hovenweep lithology used for description of source

Shale- black brown to black, soft to moderately firm, platy to subplaty, waxy to subwaxy, very calcareous, an oil shale/bituminous limestone, sooty in part, probable white calcite clasts, no fluorescence (top), with parts (2%) cutting bright yellow green towards base

Description of rock type correlating to the time when oil seep was discovered

Limestone- light to dark brown grey, microcrystalline, macritic to micritic, moderately firm to firm, possible thin dark grey shale partings (very much like the shale above), slightly silty, very argillaceous, tight, no fluorescence, no cut when washed of free oil.

Comments:

1. The seep produced a greenish to yellow greenish oil the viscosity of cooking oil.

2. The oil very likely was produced from local fractures in the Hovenweep Shale which failed to propagate during Drill Stem Test #1.
3. When the oil was noted, mud pit depth measurements indicated a 2" increase in volume. Consequently, drilling personnel added barite to the system to suppress the gas.
4. Ten additional feet were drilled to catch any sub-Hovenweep fractures.
5. When the zone was tested (along with the two Upper Ismay porosities previously discussed in this Section), no oil scum or oil/mud emulsion was produced. Had the local fracture been part of a network, the Drill Stem Test would have resulted in both some degree of fracture propagation, as well as some oil in the test. This conclusion is reinforced by the particularly low flow pressures, the steadiness of these flow pressures, and, by the the lack of "sputtering" variations in the surface blows.

Rating:

Poor

4. Lower Desert Creek Porosity 6094-6097 (Strip Log)

	<u>Before</u>	<u>During*</u>	<u>After</u>	
Drilling Rate	5.75	3.5	4.25	min/ft
Hotwire	190	260	200	units
C1	5300 (1)	10500 (1.98)	5700 (1.07)	ppm
C2	1100 (1)	3800 (3.45)	1350 (1.23)	ppm
C3	875 (1)	2200 (2.51)	950 (1.08)	ppm
C4	400 (1)	1050 (2.62)	450 (1.12)	ppm

Lithology:

Limey Dolomite- light to medium brown with scattered grey brown, microcrystalline to sucrosic (with strong recementation), moderately firm to firm, moderately silty in part, visible dolomite rhombs, sponge like appearance in part, moderate to strong calcitic matrix, scattered pinpoint black residual stain, trace fair porosity, slight light green mineral fluorescence from tighter parts (possibly slightly anhydritic), no cut

Rating:

Poor- insufficient porosity over too short an interval

DRILL STEM TEST #1

Interval: 5998-6066 (Strip Log)
(E-Log)

Formation: Upper Ismay, Hovenweep

Type: Conventional

Times: 15-45-60-180

Surface Blows:

Initial Open: Opened with a 1/2" surface blow.
Increased to 9" @ 2 minutes
1/2 PSI at 5 minutes
3/4 PSI at 15 minutes

Initial Shut-in: Shut-in with 3/4 PSI
Blow died in 10 minutes

Final Open: Opened with 1/4" blow
Increased to 3" at 5 minutes
4" in 30 minutes
4" at 60 minutes

Final Shut-in: Shut-in with a 4" blow
Blow died in 10 minutes.
No gas to surface

Final Recovery:

110' of slightly gas cut mud	1.5 @ 65 F
(recovery Chlorides.....)	1000 ppm*
(mud pit resistivity.....)	1.5 @ 65 F
(mud pit Chlorides.....)	300 ppm*

Sampler: 2100 cc Capacity

0 cubic feet of gas (25 psi pressure on guage)
1000 cc of slightly gas cut drill fluid with specks of oil

Resistivity of sample recovery
Chlorides of sample recovery

1.0 @ 65 F
1000 ppm*

*NOTE: Part of variation in resistivity may be due to effect of gas in mud

Pressures:

Outside Depth: 5864

Initial Hydrostatic	3129
Final Hydrostatic	3116
Initial Flow	108-108
Initial Shut-in	113
Final Flow	108-108
Final Shut-in	168

Temperature

128 F

Oil Recovery:

One possible speck**

CONCLUSIONS:

1. This test was run due to a) the presence of oil seepage from the Hovenweep, and b) the accessory need to get R_w 's for poorly developed Upper Ismay porosities
2. The final flow and final shut-in were shorted due to the extremely surface blow of 4" noted during the final flow
2. The test was mechanically successful

** The Hovenweep oil failed to flow with the test, and, yet, responded weakly to the swabbing affects resulting from tripping out the tool. This strongly suggests that the oil resided in network of small discontinuous fractures, as no significant fracture propagation can be inferred from the test results.

Lithology

4500-4515

Interbedded

Sandstone- white to buff to brown to oxicolored, very fine to fine, rounded, frosted
medium sorted quartz in a clay cement

Shale- as below

4515-4560

Shale- maroon to brown to lavender with possible scattered unoxidized greys, subearthy
to earthy, soft and in suspension to firm, mostly noncalcitic, silty and sandy-
grading to very fine to fine grained shaley sandstone, locally bentonitic

4560-4594

Shale- orange to brown with less maroon and other light oxi-colors, silty (60%) to sandy
(25%), earthy to subearthy, moderately firm to firm and brittle, noncalcitic

Sandstone- white to buff, very fine to fine to trace slightly coarse, rounded, frosted,
medium to well sorted quartz in a tight montmorillinite clay matrix

4594-4626

Interbedded

Sandstone- white to clear to scattered buff, fine to medium grained, subrounded, frosted,
medium to poorly sorted quartz grains in a montmorillinite matrix, very isolated
disseminated fair porosity (possibly exaggerated due to chip washing)

Siltstone/Sandstone- orange to buff, to fine grained, shaley (grades to shale), slightly
to moderately calcitic in part

4626-4656

Interbedded

Sandstone- as above (percentage increasing)

Siltstone/Sandstone- as above

4656-4695

Interbedded

Shale- orange to orange brown to (possibly) locally reduced greys, moderately firm to firm, silty (25%) to sandy (10%), becoming moderately calcicity (possibly relic groundwater cementation) associated with sandier portions, bentonitic in part

Sandstone- white to buff to orange, very fine grained (to a silty) to moderately coarse, subrounded, slightly to moderately frosted, moderately to poorly sorted quartz grains in a medium calcity white to shaley clay matrix

With scattered:

Limestone- buff to grey to trace purple, cryptosparmicritic, possible as a matrix in in the sandstone just described

4695-4768

Interbedded

Shale- lavender to light grey to maroon with oxi-colored traces, earthy to scattered waxy, medium firm to firm, to moderately calcicity, silty (to 30%), occasional marly appearance

Siltstone- in general as above shale

Sandstone- light grey to buff to trace lavender, very fine to fine, frosted, poorly sorted, subrounded quartz in a shaley to limey clay matrix

Limestone Streaks- light purple grey, cryptosparmicritic, firm, finely bedded

4768-4814

Sandstone- abuff to light brown to scattered light grey brown, very fine to fine rounded, well sorted quartz in a moderately to slightly firm, shaley clay matrix, tight-grading into siltstone, limestone lenses at base

Shale- brown to scattered lavender brown, subwaxy to subearthy, moderately firm, slightly to moderately calcitic, silty at base

4814 Honaker Trail

4814-4834 (Sample grabbed late by crew: depth adjusted by E-log)

Limestone- light to medium brown to buff, microcrystalline and finely bedded to cryptocrystalline and dense, firm to very firm, sparitic to micritic, locally sandy to silty, grades to sandstone, scattered organic trash, tight, no show

4834-4850

Limestone-medium grey to grey with scattered mottled grey, cryptocrystalline to microcrystalline matrix, macritic to micritic, to 20% microfossils, moderately firm to trace very firm, trace disseminated black organic debris (to .5%), strongly recemented with thin dark grey to black organic layers, possible trace isolated very fine sandstone grains

4850-4882

Limestone- buff to light grey buff, cryptocrystalline to microsparmicrite, to very firm, slightly dolomitic, scattered organic material rich zones- associated with poorly defined pelletal zones, possible scattered pyrite in greyer parts, interbedded with thin terra rosa horizons characterized by red beds, obscured limestone features, and, greatly increased silt and sandstone content

Grading towards base:

Shale- medium grey, subwaxy to subearthy, subblocky, abundant organic debris, to moderately firm, noncalclitic in large part, trace pyrite

4882-4926

Limestone- buff grey to medium grey, microcrystalline with microsucrosic parts, moderately firm to trace very firm, sparitic to micritic, to trace very firm, occasionally calcarenitic, abundant fossil fragments, scattered organic debris, argillaceous, no show

4926-4960

No reliable sample. Assumed to be transition to below.

4960-4988

Limestone- light buff grey to cream, cryptosparmicritic matrix to micromacritic, moderately firm to firm, mostly fine bedded, pelletal in part, possibly interbedded with calcic clay matrixed very fine to fine grained sandstone lentils, zones with scattered organic debris, with scattered shale streaks showing worm burrows, no show

Sandstone- clear to light brown, fine to medium, subrounded slightly frosted, medium sorted quartz grains in a moderately firm calcic clay matrix, abundant carbonaceous trash, to fair porosity

Probable Terra Rosa Zones

Sandy Shale- orange to brown, earthy, moderately firm, moderately calcitic

4988-5016

Limestone-medium grey buff to buff, microsparmacritic with scattered micrites, moderately firm to very firm and algal (as well as cherty), occasionally sandy, silty in part, with scattered thin medium grey shale streaks (grade to micrites in part)

5016-5048

Limestone- light grey buff to light to medium grey to white, cryptoparmicrites to isolated macrites, medium firm to firm, occasionally finely bedded, occasionally fossils, light grey to dark grey shale streaks, locally sandy, strong recementation, trace organic debris, no show

5048-5076

Interbedded

Limestone- brown to buff, microsucrosic to trace microcrystalline, macritic, moderately firm to firm, slightly dolomitic, more finely bedded than massive, trace pyrite, grades to sandstone lentils, argillaceous in part, trace organic debris, to fair porosity, inoceramus, grades to shale in part

Limestone- medium to dark grey browns, cryptosparitic, firm to very firm, possibly locally anhydritic, trace chert

5076-5118

Interbedded

Limestone- buff to light grey, cryptosparmicritic to microsparmacritic, moderately firm to trace very firm, silty (20%) and sandy (10%), trace micrite

Sandstone- white to clear to light grey, fine to medium subrounded to slightly frosted, medium sorted quartz and calcarenite grains in a moderately firm calcic clay to to crystalline matrix. Grades to limestone as immediately above

Shale- grey to grey green, waxy to subwaxy, soft to moderately firm, friable, grades to a micrite

5118-5148

Interbedded

Limestone- light grey brown to medium grey to buff, cryptosparmicritic to microsparmacritic, moderately firm to firm, locally anhydritic, sandy (to 15%), silty (to 20%), trace anhydrite plugged vugs, scattered organic trash, no show

Sandstone- light to medium grey to brown, fine to slightly coarse, rounded to subangular, slightly frosted, medium sorted quartz grains in a grey shale (40%) to calcitic light clay (60%) matrix that is soft to moderately firm

Shale- grey to grey green, etc.

5148-5175

Limestone- increasing, and flooding, samples towards base- medium grey tan (top) to abuff grey to white (base), cryptosparmicritic to microsparmacritic, moderately firm to firm, finely bedded in part, argillaceous/silty/sandy in part

Sandstone- white to buff white to clear (becoming white towards base), very fine to isolated coarse, medium to poorly sorted, occasionally slightly frosted quartz grains in a crystalline to clay, soft to occasionally very firm, matrix

5175-5193

Limestone- medium grey brown to light grey, cryptosparmicritic, moderately firm to very firm, trace chert, isolated shaley partings, tight

5193-5228

Interbedded

Sandstone- white to off white to buff, fine to medium, subangular to subrounded, medium to poorly sorted, medium frosted quartz grains in a calcitic crystalline to clay cement matrix. Grades to micritic limestone

Shale- medium to light grey, subwaxy to subearthy, subplatey to subblocky, soft to medium firm, occasionally moderately calcitic, occasionally silty, trace organic debris

Limestone- medium brown grey to buff grey, microsparitic to cryptosparitic, moderately firm to firm, silty, isolated sandstone grains

Abundant Cavings

5228-5253

Limestone- tan to medium brown, cryptosparitic to micritic, possible disseminated chert, firm to very firm, silty (50%), isolated sandstone lenses (5%), occasionally dense and algal

Abundant Cavings

5253-5278

Interbedded

Limestone- medium grey browns to buff greys with scattered whites, microsparmicritic to micritic with scattered microsucrosic, moderately recemented, macrites; moderately firm to firm, silty (20%) sandy (15%), abundant organic trash

Sandstone- white to light grey buff to clear, very fine to medium, subrounded to subangular, medium to poor sorted, slightly to moderately frosted quartz grains in a clear crystalline to calcic clay matrix, no show

Shale- light to medium grey brown, mostly subearthy, moderately firm, subblocky to subplatey, calcicitic, grades into a "dirty" micrite

5278-5282

Limestone- medium brown grey, cryptosparite, firm to occasionally very firm, algal, possible disseminated chert

5287-5307

Limestone (top)- medium grey brown top grey, crypto to microsparmicritic, moderately firm to firm, streaks with abundant matrix shaley clay minerals; sandy in part, scattered organic debris

Grading into:

Limestone- buff grey to buff to scattered tan, microsparitic, trace sucrosic (with strong recementation), trace coral texture, organic rich zones associated with thin zones of micropellets, fair porosity complicated by clays, no show

5307-5324

Shale- medium grey to medium grey brown, earthy to subwaxy, subblocky to subplatey, soft to firm, to moderately calcicitic (grades to limestone described below), organic debris

Limestone- medium grey brown to scattered greys, cryptosparmicritic, soft to very firm, isolated sand grains, silty (10%), with possible calcite filled vugs

5324-5340

Limestone- buff to grey to white to buff grey, microsparmacritic to microsparmicritic, moderately firm to trace very firm (in algal parts), streaks of fossil hash, silty streaks, scattered white to buff very firm matrixed very fine to fine grained sandstone lentils, argillaceous in part

5340-5376

Limestone- buff to buff grey to light grey to scattered brown grey, microsparmicritic to micritic, firm, strong crystalline intergrowth, argillaceous in part, scattered coral texture, trace black organic residue

5376-5400

Limestone- medium to dark grey to grey brown with scattered buff grey, crypto to microsparmicrites and macrites, firm to very firm, algal in part, often on

borderline between shale/limestone, silty (20%), locally sandy,
disseminated chert, scattered chert nodules

5400-5423 Complicated by breaking in bit

Limestone- as above

With

Limestone- grey buff, cryptosparmicrite, very firm to hard, disseminated chert with
chert nodules and/or beds, grades to shale in part

5423-5446

Limestone- medium to dark grey brown with scattered maroon tints, microsparitic
to cryptomicritic, firm to very firm to trace hard, silty (15%) and sand (5%-
in lighter streaks- may be cavings in part), disseminated chert, isolated chert
nodules, with dark grey to grey brown shale streaks and/or partings (part is
borderline shale/limestone)

5446-5477

Interbedded

Limestone- as above with more free chert

Limestone- buff grey to off white, crypto to microsparmicritic, moderately firm,
conspicuous calcite vug filling, argillaceous, locally silty and sandy (drill
bit may be inverse drilling due to bit hardness)

Shale- medium to dark grey to dark grey browns, subblocky to subplatey, subearthy
to subwaxy, moderately firm, grading to micrite, organic rich partings

5477-5503

After transition

Limestone- cream to buff grey, cryptosparmicrite to microsparmacrite, firm to very
firm, brittle in part, massive to finely bedded, isolated sandstone lentils, coral
pods, moderately recemented, no stain, no show

5503-5542

Mostly

Limestone- dark grey to dark grey bron, crypto to microsparmicritic, moderately
firm to scattered hard, grades to shale in part, algal layers, cherty in part

5542-5556

Limestone- as above, with a slightly larger crystalline grain size

5556-5578

Limestone- light buff to grey buff, microsparmicrite- cryptosparmicrite, moderately firm to trace very firm, fossil hash in part, possible spicules, finely bedded in microcrystalline parts, light grey calcitic clay partings, no stain, no show

With scattered streaks

Limely Shale-dark to medium grey, earthy to subwaxy, micritic texture in part, associated with chert nodules

5578-5600

Limestone- light to medium brown grey, microsparmacritic, scattered cryptosparmicrite, firm with moderately firm parts, scattered organic debris, no significant stain, mobile clay matrix in part, no show

With scattered

Shale- as above

5600-5626

Interbedded

Limestone- dark grey to medium grey, microcrystalline, microcrystalline to cryptocrystalline, firm to very firm, grades to a shale, silty to sandy

Shale- in general, as above limestone- i.e., grades to micrite

5626-5642

Influx

Sandstone- white to light grey with scattered medium grey, very fine to medium subangular to subrounded slightly frosted medium sorted quartz in a moderate to strongly calcitic matrix, grading into

Limestone- light grey tan, cryposparmicritic to scattered microsparmicritic, silty and and sandy in part, disseminated chert with isolated chert nodules

5642-5655

Limestone- dark grey to grey brown, cryptosparmicrite, firm to hard, very abundant shale clay matrix, silty and sandy

Shale- very similar to above limestone

5655-5693

Limestone- buff to light grey with dark grey (more shaley) streaks, microcrystalline to cryptocrystalline, micrite with scattered macrites, firm, occasionally moderately dolomitic, silty (20%), sandstone lenses (25%), argillaceous in part- grading to shale, disseminated chert and chert nodules scattered in darker gray parts

5693-5696

Limestone- buff to light grey tan, micromicritic to somewhat sparitic, firm to scattered very firm, sandy and silty streaks, slightly dolomitic, trace fossil hash, grades to medium brown to brown grey shale streaks

5696-5721

Interbedded

Limestone- medium to dark grey to white to buff, micro to crypto micritic- grades to shale, moderately firm to scattered very firm, disseminated chert, silty/sandy in part

Shale- medium grey to dark grey brown, subwaxy to subearthy, subblocky to occasionally platy, calcic, grading into micritic limestone, as above

5716-5721

Limestone- buff grey to light tan, crypto to microsparitic, firm to very firm to scattered hard and chert, dense and massive, shaley in part

With

Shale- as in the previous description, but browner

5721-5742

Limestone- buff to light grey tan, micro to scattered microsucrosic, sparitic to occasionally micritic, firm to very firm, not significantly shaley, silty and sandy, not particularly cherty, occasional carbon rich streaks, with abundant white to tan fine to moderate grained quartz sandstone lenses

5740-5742

Limestone- as above, but, less sandy, and increasingly cherty

5742-5767

Interbedded

Limestone- buff to light grey tan, micro to cryptosparmicritic, moderately firm to scattered very firm and cherty, argillaceous in part

Limestone- much greyer, micro to cryptomicritic, moderately firm to firm, silty (20%), sandy (10%), with

Shale- dark grey, subwaxy, platy, moderately calcitic in part, trace carbonaceous partings, with widely scattered white microclasts

5767 See Show Report Section: Uphole Migrated Upper Ismay
Gas

5770-5780

95% Shale/Limestone- medium to dark grey, crypto to micromicritic, moderately firm to very firm, slightly to moderately calcitic, silty (to 25%), sandy (3%), with scattered blacka to dark grey calcicity shales with white microclasts and occasional traces of pyrite

5780-5801

Shale- dark grey to black, subwaxy to waxy, platy, moderately firm to firm, calcitic, often gooey (lighter parts), white calcite microclasts (% higher than above), trace pyrite, "fabric" appearance (very micritic) on dark grey parts
Limestone- medium to dark grey, micro to cryptosparitic (50%) - micritic (50%), moderately firm to very firm, 5% isolated very fine to fine sandstone grains, increased percentage (to 10%)

5801 Upper Ismay

5801 Regional Capping Facies

5801-5842

Interbedded

Limestone- medium grey to scattered grey brown, crypto to micromicritic, moderately firm to scattered very firm, argillaceous in part, grades to shale in part, very likely anhydritic (despite no significant evidence of the molds from washed out anhydrite clasts)

Anhydrite- by penetration rate (the slower drill rate)

5820 Mud Clabbered up due to anhydrite

Depth of mud clabbering (flocculation) is porportional to Ph and the total volume of the mud system, which in this system totaled 250 bbls (a small system)

5842-5870

Limestone- as in above description

Anhydrite- by penetration rate and mud properties

A possible transition towards base with the limestone switching over to:

Dolomite- light to medium tan to occasionally brown, cryptocrystalline matrix surrounding dolomite rhombs, anhydrite clast washout molds

5870 Massive Anhydrite

5870-5910

Anhydrite- white and amorphous, sugary
Dolomite Streaks- as above description

Note: no red shales

5910-5914

After a thin transition of
Dolomite- medium grey brown, microcrystalline to cryptocrystalline (and more calcitic)
moderately firm to very firm, anhydrite clasts (anhydrite washed out), with a
series of carbon rich streaks (often described as bituminous limestones or
as sapropelic streaks)
Changes to Dolomitic Limestone (See Show Descriptions)

5914 Algal Facies

5914-5918 See 1st Porosity of Upper Ismay Show Report

5917-5928

Limestone- medium grey brown (and more micritic) to medium grey (and less
micritic), firm to very firm, moderately dolomitic in part (possibly
cavings in part), anhydritic, macritic streaks (the whole thing varies
from a wackstone to a mudstone and is likely interbedded with anhydrites
in part)

With lessor amounts of

Shale- medium grey- some brown greys, earthy to subearthy, subplatey to sub-
blocky, moderately firm to firm, moderately calcitic, silty in part, locally
sandy

5928-5930 2nd Porosity of the Upper Ismay: See Show Report

5930-5939

Limestone- light grey to tan grey to scattered dark grey, cryptosparmicrite to occasional macrite, moderately firm, shaley, becoming darker, grades to shale

Shale- medium grey to grey, becoming darker overall with depth, platy to subplaty moderately calcitic, organic in part, becoming increasingly fissile

5939 Hovenweep

5939-5950

Shale- black brown to black, soft and in solution to moderately firm, slightly to moderately homogenic in large part (steady drill rate), very carbonaceous, sooty in part, calcitic, no fluorescence, select part cut bright yellow green (Dry)

5950 Lower Ismay

5950-5954 See Show Report: Hovenweep Oil Seep

5954-5970

Limey Dolomite- light to medium grey brown, microcrystalline, moderately firm and argillaceous to very firm, silty and sandy with both a fairly conspicuous sandstone fabric and dolomite rhombs and to a sandstone like appearance, grades to a shale, anhydritic in part

5970-5998

Dolomite- as above with
Anhydrite- white, gooey

5998-6012

Limestone- medium grey to scattered grey brown, cryptosparmicritic with scattered microsparmicrites, moderately firm to very firm, more dolomitic at top than towards base, scattered dark grey shale partings increasing gradationally towards base

Anhydrite

6012 Gothic

6012-6044

Shale- black to dark grey, waxy to subwaxy, subblocky to platy, friable, moderately to strongly calcitic, sooty, moderate to large calcite clasts- probably interbedded with limestone as in the above description which grades to a bituminous limestone.

6044 Upper Desert Creek

6044-6052

Dolomite- medium grey brown to brown, microcrystalline to microcrystalline with moderate to strong recementation, moderately calcitic, firm to very firm, anhydritic, occasionally argillaceous, clay matrix in large part, trace residual black pinpoint stain (.01%), trace mineral fluorescence, no show

6052-6071

Dolomite-as above, as well, as denser, and more strongly recemented

Anhydrite- white and gooey

And

Limestone- medium to light grey brown, cryptocrystalline to microcrystalline, firm, sparitic, finely bedded, tight, no show

6071-6077

Limestone- medium to light grey to grey brown, cryptosparmicritic, moderately firm to locally very firm and anhydritic, dolomitic in part, shale streaks

6077-6082

Interbedded

Limestone- medium grey browns, crypto to microsparmicritic, moderately firm to very firm, occasionally moderately dolomitic, argillaceous in part, grades to subwaxy moderately calcic grey shale, possibly anhydritic in part

Dolomite- medium to light grey brown, microcrystalline, firm, slightly to moderately calcitic, moderately argillaceous, appears to have been strongly recemented

6082 Lower Desert Creek

6082-6097

Limestone- medium to light grey, cryptosparmicrite to microsparmicritic, firm to very firm, slightly dolomitic, very anhydritic, possible shale partings
Anhydrite- white and gooey (most being scavenged by the mud system)

6097-6100 See Show Report for Lower Desert Creek Porosity

6100-6112

Dolomite- medium to light brown, microcrystalline, firm to very firm, slightly to moderately calcitic, silty in part, scattered organic debris (.2%)
5Limestone- light to medium brown, microsparmicritic, moderately firm to very firm, dolomitic in part, thin grey shale partings

6112 Chimney Rock

6112-6138

Shale- very dark grey to black, waxy to subwaxy, moderately firm to firm, platey to subplatey, white calcitic clasts, grades to bituminous limestone streaks

6138 Akah

6138-6167

Interbedded

Limestone- light to dark brown grey, microcrystalline to scattered microsucrosic, medium firm to scattered hard, dolomitic in part, strongly recemented, argillaceous, grades to shale, disseminated chert in part, laminated, occasionally asphaltic residual stain, no significant fluorescence, no show
Dolomite- in general as above limestone

6167 Salt

6170 Total Depth

HOLE HISTORY

Note: The maximum deviation on this well was 1 1/4 degrees. Consequently, deviations are not tabulated in this report. For further information, consult the mudlog.

1/19/89 Rigged up, drilled 55' of surface, cemented, and, waited on cement (RPM 90, WOB all, PP 600)

1/20/89 MND: 55'. Drilled 1405'. Drilled and ran surveys. (75 extra truck loads of water due to "Rimrock Problems")(RPM 80/85, WOB 21/35/45, PP 1000/1200, SPM 66)

1/21/89 MND: 1460'. Drilled 548'. Completed 11" hole, set 1998' of 8 8/38" casing, cemented intermediate string, waited on cement, cut off casing, and welded on head (RPM 80/85, WOB 40/45, PP 1200, SPM 54)

1/22/89 MND: 2008' (shoe adjusted). Drilled 290'. Finished welding on head, tested head to 1600 PSI for 30 minute. Nipped up, pressure tested choke, blind ram, pipe ran, anular pipe, upper kelly, finished pressure testing, drilled through shoe, and, commenced making hole (RPM 75, WOB 42, PP 1100, SPM 70)

1/23/89 MND: 2298'. Drilled 777'. Drilled and ran surveys (RPM 75, WOB 42, PP 1150, SPM 69)

1/24/89 MND: 3375'. Drilled 851'. Drilled (RPM 75, WOB 42, PP 1100, SPM 70)

1/25/89 MND: 4226'. Drilled 514'. Worked 3 1/2 hours of tight hole (likely sluffing from the Cutler and Shinerump Formations- see caliper on Sonic). Mudlogger commenced logging at 4450'. Geologist commenced work at 4500'. (RPM 75, WOB 42, PP 1150, SPM 69)

1/26/89 MND: 4740'. Drilled 406'. (Sluffing and tight hole conditions resulted in preprognosis mudup. Slow net penetration largely the result of longer than normal connection times, and, higher than normal mud solids)(RPM 75, WOB 42, PP 1250, SPM 70)

1/27/89 MND: 5156'. Drilled 273'. Tripped for bit. Worked 90' to bottom (RPM 72, WOB 44, PP 1200, SPM 60)

1/28/89 MND: 5429'. Drilled 306' (See inserted comments for 1/26/89)(RPM 68/72, WOB 44/47, PP 1200, SPM @68)

1/29/89 MND: 5735'. Drilled 261'. Due to lack of development of Upper Ismay porosity streaks, entire unit was evaluated as a unit at @ 5955. Oil was noted going over the shaker at @ 5952-5954 (Hovenweep Seep)(See Drill Stem test #1) 2" gain in mud tank fluid level- raised mudweight from 9.7 to 9.9, circulated oil out. Drilled 10' to capture possible fractures (See Show Report Section), and, conditioned mud in preparation for DST #1 (RPM 75, WOB 45, PP 1200, SPM 68-70)

1/30/89 MND: 5966'. Drilled 50'. Assembled tool, tripped in with same, ran DST #1, valid test, tripped out of hole, broke down tool, tripped in with bit, circulated while washing oil seepage out of hole (1 1/4 hours), and resumed drilling (RPM 75, WOB 42, PP 1200, SPM 68)

1/31/89 MND: 6016'. Drilled to total depth at 6170' (driller's depth). Circulated samples at @ 6107 to evaluate Lower Desert Creek (See Show Report Section), drilled 3' into salt @ 6167, circulated bottoms up, short tripped, circulated bottom's up a second time, mud logger released, tripped out of hole while strapping (revised depth- 6173'). Rigged up E-loggers, E-logger depth- 6173', E-loggers Neutron tool had either software and/or hardware problems, tripped out of hole and replaced tool (which was different model utilizing different software)(RPM 75, WOB 46, PP 1200, SPM 68)

2/01/89 MND: 6713' (E-logger depth). Went to bottom with new Neutron tool string, Caliper began to stick at @ 2950'. After attempting to work calipers up through the interval, decision was made to finish the run with the calipers shut (caliper could be merged using Gamma). Completed run, and, went into hole with Dual Laterolog string. Tool could not pass @ 3052' (having encountered difficulties in the Shinerump Formation enroute). Tripped in with bit to push (not circulate) debris to bottom (see caliper log on Sonic). Tripped out. Ran in with Sonic string, and, selectively opened and closed calipers over ledged, obstructive intervals. Ran sidewall cores at 5918, 5924, 5930, 5936, 5942, and, 5948' (Neutron correlated) depths. Core handling status determined. Decision received to P & A at 2300 hours. Company man notified by geologist. Geologist released at 0600 AM, 2/02/89.

MUD HISTORY

<u>DATE</u>	<u>1/19</u>	<u>1/20</u>	<u>1/21</u>	<u>1/22</u>	<u>1/23</u>	<u>1/24</u>	<u>1/25</u>	<u>1/26</u>	<u>1/27</u>	<u>1/28</u>
Depth	-	-	1950	2008	2807	3724	4295	4873	5326	5570
Weight	Spud Mud	-	-	8.7	8.8	8.7	9.3	9.3	9.6	
Viscosity	-	-	-	-	-	30	30	33	34	34
Plastic V	-	-	-	-	-	5	4	5	7	9
Yield P	-	-	-	-	-	1	1	5	5	5
Gel Str	-	-	-	-	-	0/1	0/1	4/10	3/11	4/11
Ph	-	-	-	-	-	8.5	8.0	9.0	9.0	9.8
H2O Loss	-	-	-	-	-	-	-	22	18	16
Chlorides	-	-	-	-	-	120	120	40	120	40
Calc	-	-	-	-	-	280	300	300	300	300
Solids%	-	-	-	-	-	3.0	2.5	7.0	7.0	9.8

<u>DATE</u>	<u>1/29</u>	<u>1/30</u>	<u>1/31/89</u>
Depth	5825	5966	6166
Weight	9.8	10.1	10.1
Viscosity	45	37	40
Plastic V	10	8	10
Yield P	15	4	7
Gel Str	8/19	4/8	3/12
Ph	11.0	10.5	10.0
H2O Loss	16	8.8	10.0
Chlor	300	300	500
Calc	80	120	400
Solids%	7.0	4.5	4.5

Note: These are field readings from the mud hand

On the morning of the ^{29th}~~28th~~ and the afternoon of the ^{30th}~~29th~~, viscosity readings in excess of 120 were recorded by roughnecks. On one occasion on the 21st, a reading of 180 was recorded.

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APR 27 1989

GEOLOGICAL ANALYSIS - CLASTICS / CARBONATES
SINGLE WELL / FIELD / REGIONAL STUDIES
COMPLETION / STIMULATION STUDIES
ROUTINE AND SPECIAL CORE ANALYSIS

RESERVOIRS Inc.

1827 GRANT STREET

DENVER, COLORADO 80203

(303) 830-1986

April 12, 1989

Mr. Jim Peterson
Axem Resources, Inc.
7600 E. Union Avenue
Suite 1100
Englewood, CO 80237

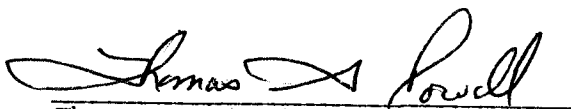
RE: RMD 1415 - Petrographic Analysis of Five Selected Upper Ismay Samples From the Axem Resources Black Steer Federal #7-25 Well, Sec.25, T.38S., R.24E., San Juan County, Utah.

Dear Mr. Peterson:

Reservoirs, Inc. has analyzed five selected Upper Ismay samples by thin section petrology from the Axem Resources Black Steer Federal #7-25 well, Sec.25, T.38S., R.24E., San Juan County, Utah. The objectives of this study include characterizing the lithology, mineralogy, bioclastic components and porosity of the samples, and interpretation of the depositional environment represented by the samples. This report presents the results of the project.

Job number RMD 1415 has been assigned to this study by Reservoirs, Inc. Three copies of this report have been delivered to Mr. Jim Peterson of Axem Resources, Inc. One copy of RMD 1415 has been retained by Reservoirs, Inc. for future reference in discussions with Axem Resources. All matters pertaining to this study are considered confidential and the property of Axem Resources and Reservoirs, Inc. Discussion of this information with persons other than those of Axem is not permitted without prior approval of the client company.

Sincerely,



Thomas G. Powell
Senior Staff Geologist
Reservoirs, Inc.

TP/rmm

INC.

RECEIVED
APR 27 1980

DIVISION OF OIL, GAS & MINING

303/830-1986

REMARKS: _____

RESULTS AND INTERPRETATIONS

Rock Characterization

Sample 5,918 feet

This sample is characterized as a silty, dolomite mudstone. Fairly abundant quartz silt, along with lower amounts of muscovite and feldspar silt float in a completely dolomitized micrite matrix. Opaque pyrite and black organic debris are disseminated throughout. The only bioclastic material present may be non-distinct spicules. Overall, this sample is tight, with no macroporosity. Microporosity is the only pore type associated with this sample, and may be abundant.

Sample 5,924 feet

This sample is characterized as a silty, bioclastic dolomite mudstone. In most respects, it is identical to sample 5,918 feet, except that numerous bioclasts are scattered throughout the silty, dolomitized micrite matrix. Crinoid fragments are the most abundant bioclasts but minor to rare abundances of brachiopod, trilobite, bryozoan and phosphatic (fish?) fragments are also observed. Most originally calcareous fossils are still composed of calcite. Rare silica (quartz) replacement of brachiopods and anhydrite replacement of crinoids is observed. As with sample 5,918 feet, this sample is tight, with no macroporosity. Microporosity is interpreted as abundant.

Sample 5,936 feet

This sample is a dolomitic, bioclastic anhydritic lime mudstone. Bioclasts (including crinoids, brachiopods, echinoid spines, bryozoans, forams and ostracods) and rare quartz silt are present in a partially dolomitized and recrystallized micrite matrix. Anhydrite is present replacing micrite and dolomite (?) along with numerous crinoid fragments. No macroporosity is present in this sample, while microporosity may be abundant.

Samples 5,942 and 5,948 feet

Both of these samples are from the Hovenweep Shale, which underlies the Upper Ismay. They are characterized as silty, sapropelic dolomite mudstones. Abundant dolomite along with detrital clay (illitic) occurs with scattered quartz silt, muscovite and pyrite. Possible non-distinct spicules are the only fossils present. No macroporosity exists in these samples. Microporosity is the only pore type. A silica (quartz) healed fracture is observed in sample 5,948 feet.

Interpreted Depositional Environment

The two samples from the Hovenweep Shale (5,942 and 5,948 feet) represent a transgressive marine environment of weakly oxygenated, deeper water.

The other three samples studied from the Black Steer Federal #7-25 well (5,918, 5,924, and 5,936 feet) are interpreted to be from a shallower water marine environment that is sometimes referred to as an intermound or inner shelf deep facies. Water depths could be quite shallow (tens of feet) with

fairly well oxygenated, low energy conditions predominating. Sample 5,936 feet may represent actual algal mound equivalent rocks, although no phylloid algae is observed. The presence of anhydrite replacement may suggest restricted conditions, or at least the proximity of restricted water conditions during early diagenesis. In addition, a few encrusting forams are present at this depth, indicating the presence of shallow marine grasses or algae that were not preserved.

Although it is very difficult to predict how close this section might be to an algal mound buildup, often the type of environment suggested by the rocks in the Black Steer Federal #7-25 well can be quite close to algal mound facies. The general low energy conditions present in the Paradox Basin during Upper Ismay deposition makes it very difficult to predict proximity to algal mounds unless phylloid algal particles or an abundance of encrusting organisms, pellets, or peloids are present. These types of indicators are not observed in the samples studied.

THIN SECTION DESCRIPTIONS

Well: Axem Black Steer Federal 7-25
Depth: 5,918 feet
Facies: Intermound
Rock Name: Silty, dolomite mudstone.
Bioclasts: The only bioclasts present are possible spicules.
Clastics: Detrital quartz, feldspar and muscovite silt. Pyrite and dark organic material is scattered throughout.
Cements: Abundant dolomitized micrite.
Matrix: Abundant dolomitized micrite.
Porosity: No macroporosity is observed. Microporosity is interpreted as abundant.

THIN SECTION DESCRIPTIONS

Well: Axem Black Steer Federal 7-25
Depth: 5,924 feet
Facies: Intermound
Rock Name: Silty, bioclastic dolomite mudstone.
Bioclasts: Crinoid fragments are fairly abundant. Lesser brachiopods are also observed, along with rare trilobite, bryozoan and phosphatic (fish?) fragments. Most calcareous fossils are still calcite. Rare silica replacement of brachiopods and anhydrite replacement of crinoids is observed.
Clastics: Detrital quartz, feldspar and muscovite silt. Pyrite and dark organic material is scattered throughout.
Cements: Dolomitized micrite.
Matrix: Dolomitized micrite.
Porosity: No macroporosity is observed. Microporosity is interpreted as abundant.

THIN SECTION DESCRIPTIONS

Well: Axem Black Steer Federal 7-25
Depth: 5,935 feet.
Facies: Intermound (Restricted Marine?)
Rock Name: Dolomitic, bioclastic, anhydritic lime mudstone.
Bioclasts: In decreasing abundance: crinoids, brachiopods, echinoid spines, bryozoans, forams and ostracods. Many crinoids are replaced by anhydrite.
Clastics: Rare quartz silt. Authigenic quartz is locally present within micrite.
Cements: Partially dolomitized micrite. Anhydrite replacement is fairly common.
Matrix: Partially dolomitized micrite. Anhydrite replacement is fairly common.
Porosity: No macroporosity is observed. Microporosity is the only pore type present.

THIN SECTION DESCRIPTIONS

Well: Axem Black Steer Federal 7-25
Depth: 5,942 feet.
Facies: Transgressive marine (Hovenweep Shale).
Rock Name: Silty, sapropelic dolomite mudstone.
Bioclasts: Possible spicules (?).
Clastics: Quartz silt and muscovite common. Pyrite and organics disseminated throughout.
Cements: Dolomitized micrite and probable detrital clay.
Matrix: Organic-rich dolomitized micrite and clay (illitic?).
Porosity: None apparent. Microporosity may be abundant.

THIN SECTION DESCRIPTIONS

Well: Axem Black Steer Federal 7-25
Depth: 5,948 feet.
Facies: Transgressive marine (Hovenweep Shale).
Rock Name: Silty, sapropelic dolomite mudstone.
Bioclasts: Possible spicules (?).
Clastics: Quartz silt and muscovite common. Pyrite and organics disseminated throughout.
Cements: Dolomitized micrite and probable detrital clay.
Matrix: Organic-rich dolomitized micrite and clay (illitic?).
Porosity: None apparent. Microporosity may be abundant.
One quartz-healed fracture is observed.

PLATE 1

Sample Designation: 5,918 feet

- View A. 35X, Plane Light. Silty, dolomite mudstone. Quartz, feldspar and mica silt are present throughout. Dark particles are disseminated pyrite and organic debris. No macroporosity is observed in this sample.
- View B. 80X, Plane Light. Higher magnification view of tight, silty dolomite mudstone. Elongate grain (lower center) is muscovite. Microporosity may be abundant in this sample.

Sample Designation: 5,924 feet

- View A. 35X, Plane Light. Silty, bioclastic dolomite mudstone. Relatively large crinoid fragments float in a silty dolomite matrix. Smaller bioclasts include brachiopod and trilobite fragments.
- View B. 35X, Plane Light. Dark, insoluble organic material occurs along solution seams. Bioclasts include crinoids, brachiopod (lower left) and trilobite fragments. No macroporosity is observed in this sample.

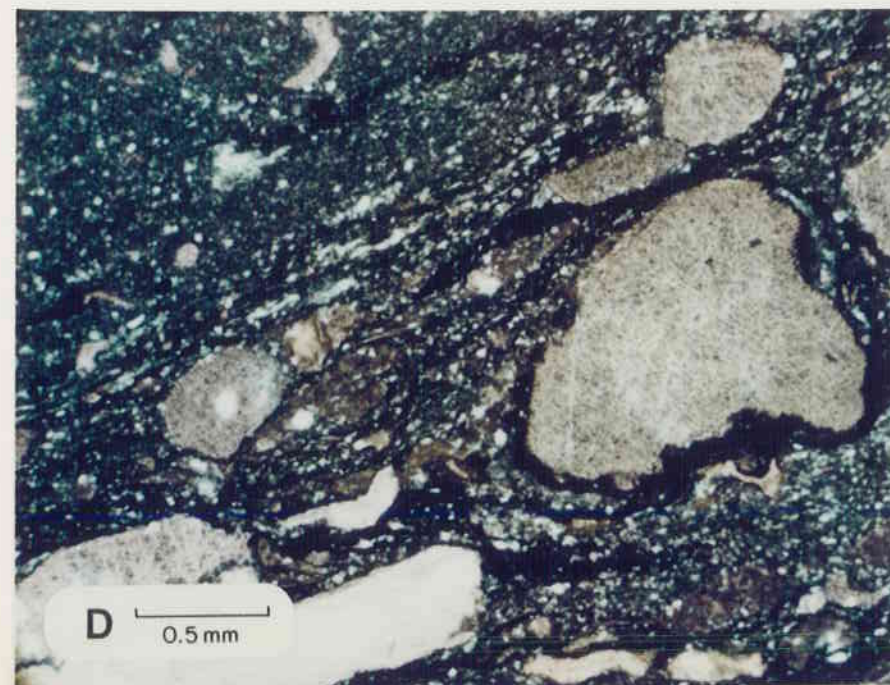
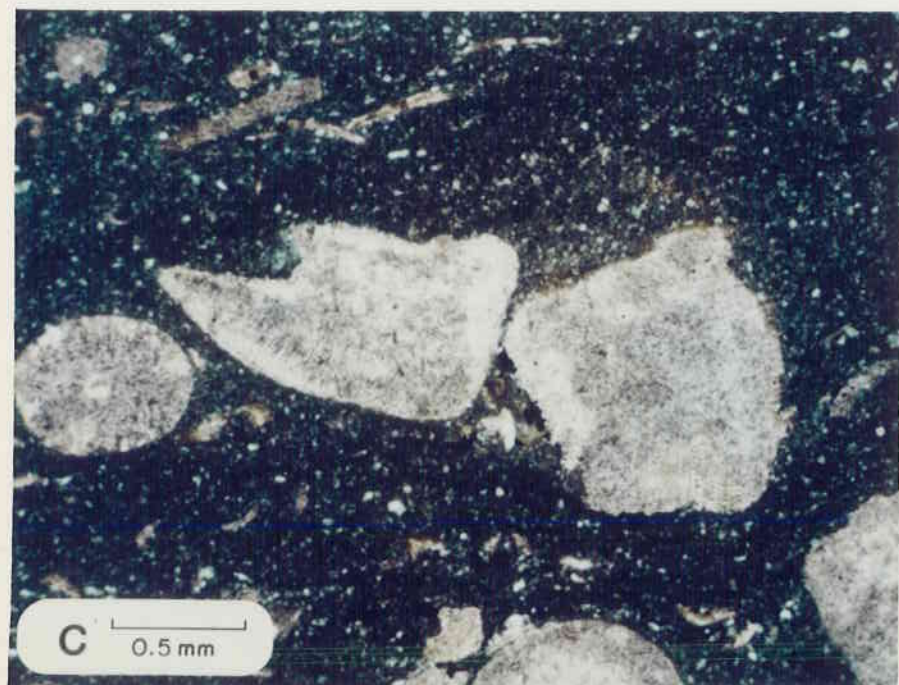
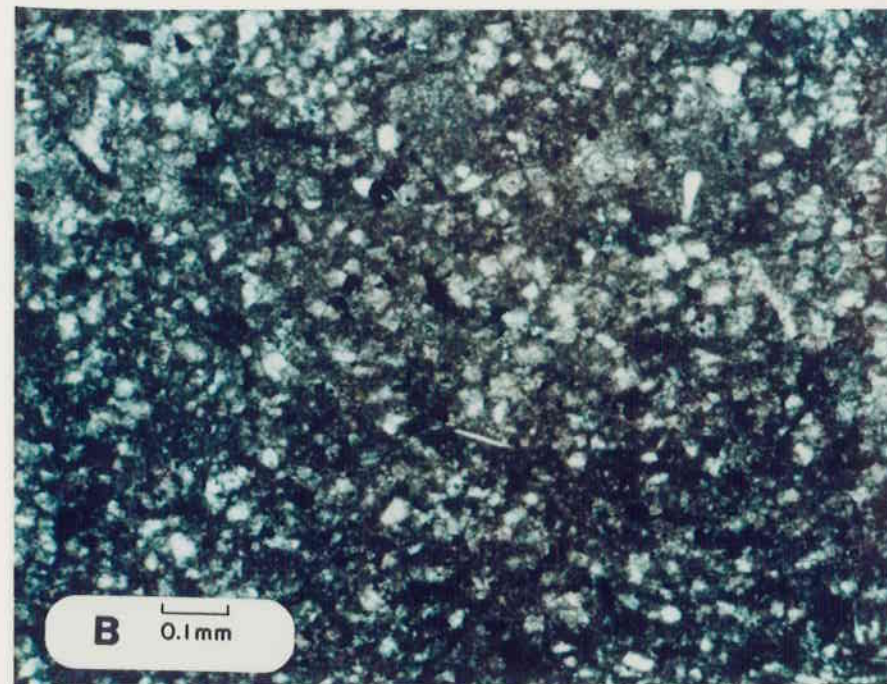
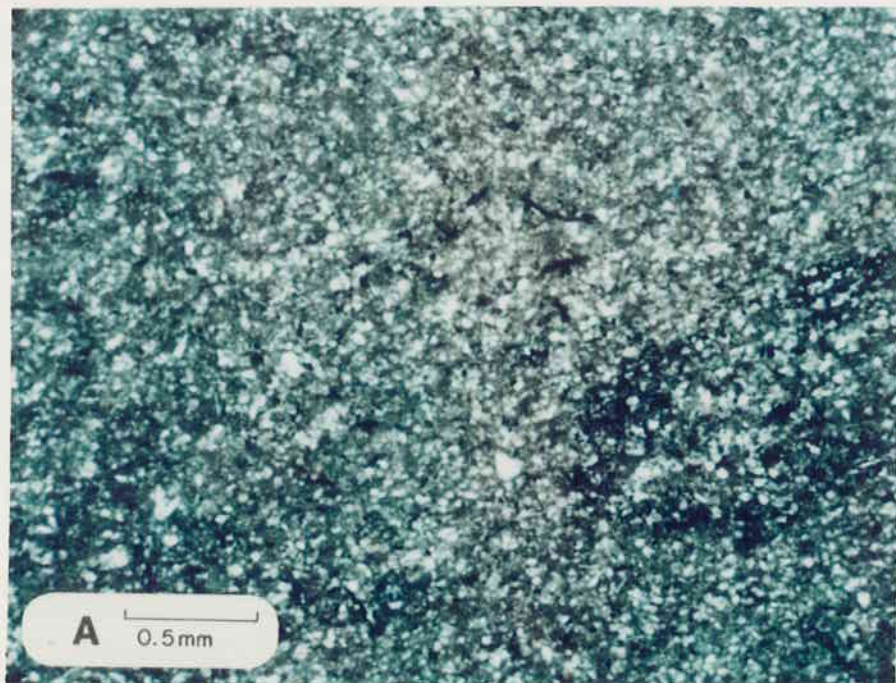


PLATE 2

Sample Designation: 5,936 feet

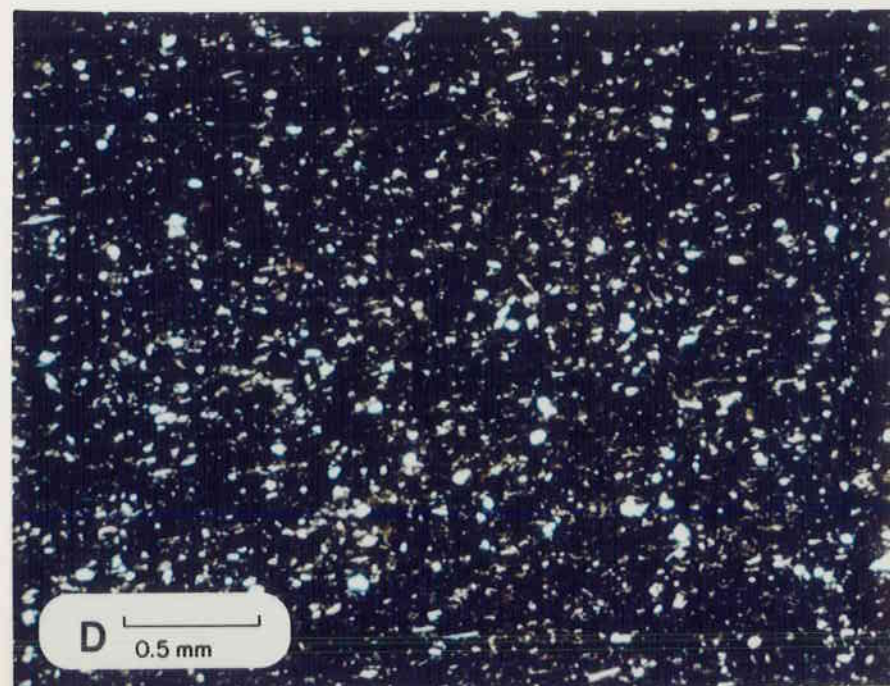
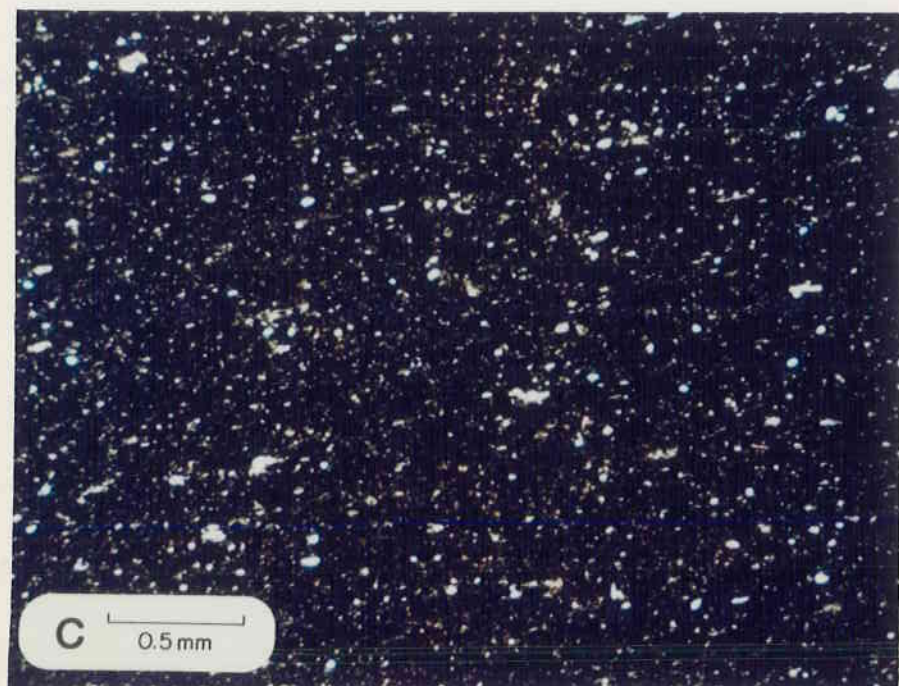
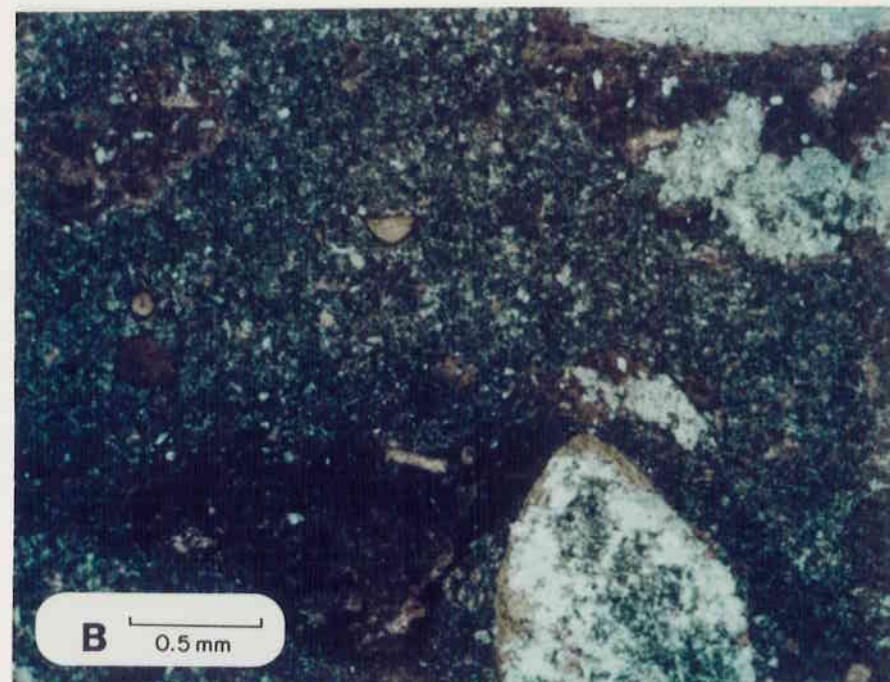
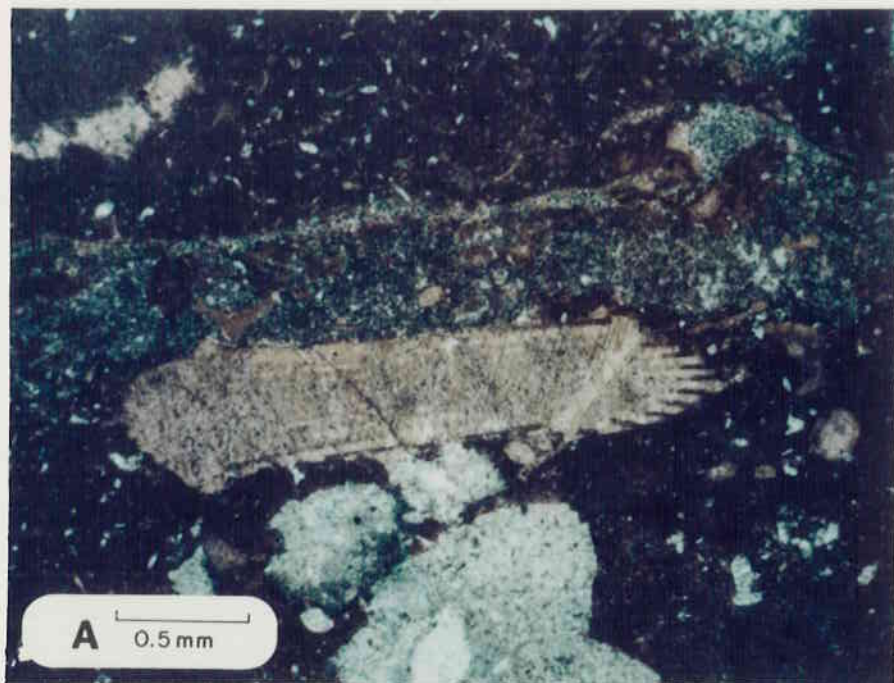
- View A. 35X, Plane Light. Echinoid spine is present in the center of this view of a dolomitic, bioclastic, anhydritic lime mudstone. Partially dolomitized micrite occurs throughout. Anhydrite (lower center) partially replaces the matrix.
- View B. 35X, Plane Light. An encrusting foram (upper center) and a brachiopod (lower right) are situated in a dolomitized micrite matrix. Anhydrite white is observed as a replacement (lower and upper right). Very minor quartz silt is seen throughout.

Sample Designation: 5,942 feet

- View C. 35X, Plane Light. Silty, sapropelic dolomite mudstone. This sample is from the Hovenweep Shale.

Sample Designation: 5,948 feet

- View D. 35X, Plane Light. Silty, sapropelic dolomite mudstone. This sample is also from the Hovenweep Shale.



POST OFFICE DRAWER YY
Cortez, Colorado 81321

TELEPHONES

OFFICE - 565-3703
HOME - 565-3888

RECEIVED
SEP 05 1989

DIVISION OF
OIL, GAS & MINING

Axem Resources
7800 E. Union Avenue
Suite 1100
Denver, Co. 80237

Attn: Ralph Sloan

Bid on Rehabing Blacksteer Fed. 7-25
San Juan County, Utah

Bid includes rehab location, reserve pit, access road, spread top soil, water bar road and rip all disturbed areas. Seeding will be done in October, included in bid.

Total Bid \$3,300.00

Thank you,

Dean McClellan
Dean McClellan

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE
(Other instructions on
reverse side)

Expires August 31, 1985
5. LEASE DESIGNATION AND SERIAL NO.
U-64081

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. ☐ OIL WELL ☐ GAS WELL ☐ OTHER

2. NAME OF OPERATOR
Axem Resources Incorporated

3. ADDRESS OF OPERATOR
7800 East Union, Suite 1100; Denver, CO 80237

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.
See also space 17 below.)
At surface
2170' FNL, 2170' FEL SWNE

14. PERMIT NO.
43-037-31461

15. ELEVATIONS (Show whether DF, RT, OR, etc.)
GR 5181'

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Black Steer Fed.

9. WELL NO.
7-25

10. FIELD AND POOL, OR WILDCAT
Wild Cat

11. SEC., T., R., M., OR BLM. AND SURVEY OR AREA
Sec. 25-T38S 24E

12. COUNTY OR PARISH
Sna Juan

13. STATE
Utah

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF	<input type="checkbox"/>	PULL OR ALTER CASING	<input type="checkbox"/>	WATER SHUT-OFF	<input type="checkbox"/>	REPAIRING WELL	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	MULTIPLE COMPLETE	<input type="checkbox"/>	FRACTURE TREATMENT	<input type="checkbox"/>	ALTERING CASING	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>	ABANDON*	<input type="checkbox"/>	SHOOTING OR ACIDIZING	<input type="checkbox"/>	ABANDONMENT*	<input checked="" type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	CHANGE PLANS	<input type="checkbox"/>	(Other) Reclamation	<input type="checkbox"/>		

(Other) _____

(NOTE: Report results of multiple completion on Well Completion or Re-completion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS: (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

RECEIVED
SEP 05 1989

The above captioned location was reclaimed by Wright's Roustabout Service. They will be seeding in October.

DIVISION OF
OIL, GAS & MINING

CONFIDENTIAL

OIL AND GAS	
DRN	RJF
JRB	GLH
DTS	SLS
1-TAS	
MICROFILM	
FILE	

18. I hereby certify that the foregoing is true and correct

SIGNED Shari Janata

TITLE Materials Coordinator

DATE September 1, 1989

(This space for Federal or State office use)

APPROVED BY _____
CONDITIONS OF APPROVAL, IF ANY:

TITLE _____

DATE _____

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



Norman H. Bangerter
Governor

Dale C. Hatch, C.P.A., J.D.
Director

Michael E. Christensen, Ph.D.
Deputy Director

State of Utah
OFFICE OF PLANNING AND BUDGET

116 State Capitol Building
Salt Lake City, Utah 84114
(801) 538-1027

well file
RECEIVED
SEP 12 1989

DIVISION OF
OIL, GAS & MINING

September 7, 1989

Mr. John Baza
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203

SUBJECT: Application for Permit to Drill the Black Steer
#13-30 Well; San Juan County
State Application Identifier #UT890727-050

Dear Mr. Baza:

The Resource Development Coordinating Committee of the State of Utah has reviewed this proposed action, and the Division of State History comments:

No prehistoric or historic sites have been recorded within the project area because no cultural resource surveys have been conducted. However, such sites may well exist in the project area.

A survey of the area will likely lead to the identification of more resources, some of which may be eligible for the National Register. It is your responsibility, based on this assessment, to determine the need for further actions, such as field surveys or predictive models to identify historic properties. If you choose to do this, [State History] will be glad to comment on your evaluation of historic properties against the National Register criteria (36 CFR 60.4) should any sites be found. [They] will also assist in applying the criteria of effect as outlined in 36 CFR 800.5.

If you have questions or need additional [historic] assistance, please contact [Jim Dykman] at (801) 533-7039. (Ref. Case No. M990)

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse, at the above address, or call Carolyn Wright at (801) 538-1535, or John Harja at (801) 538-1559.

Sincerely,

Michael E. Christensen

Michael E. Christensen
State Planning Coordinator

MEC/jw

MEMO TO WELL FILE

July 10, 1991

These wells are PA'd and have received a final abandonment notice from the BLM:

<u>NAME/API</u>	<u>LOCATION</u>	<u>FAN DATE</u>
Cherokee Fed 23-14 43-037-31392	Sec. 14 T. 37S R. 23E	5-20-91
8807 JV-P Havasu #1 43-037-31435	Sec. 01 T. 38S R. 23E	5-22-91
Dec Federal #1 43-037-31366	Sec. 10 T. 38S R. 24E	5-22-91
Brusheart Fed #1 43-037-31379	Sec. 17 T. 38S R. 24E	5-22-91
Black Steer Fed 7-25 43-037-31461	Sec. 25 T. 38S R. 24E	5-22-91
Wexpro-9 43-037-30604	Sec. 18 T. 36S R. 26E	6-11-91
Muckleshoot Fed 15-32 43-037-31380	Sec. 15 T. 38S R. 25E	6-11-91